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# GENERAL VIEW

OF THE

# AGRICULTURE

OF THE

# COUNTY OF STAFFORD:

WITH

OBSERVATIONS ON THE MEANS OF ITS IMPROVEMENT.

BY

Mr. W. PITT,

OF PENDEFORD, NEAR WOLVERHAMPTON.

DRAWN UP FOR THE CONSIDERATION OF THE BOARD OF AGRICULTURE
AND INTERNAL IMPROVEMENT.

LONDON:
PRINTED BY T. WRIGHT.
M DCC XCIV.

[ENTERED AT STATIONERS-HALL.]

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# TO THE READER.

IT is requeſted, that this Paper may be returned to the Board of Agriculture, at its Office in London, with any additional remarks and obſervations, which may occur on the peruſal, *written on the margin*, as ſoon as may be convenient.

It is hardly neceſſary to add, that the Board does not conſider itſelf reſponſible for any fact or obſervation contained in this Report, which, at preſent, is printed and circulated for the purpoſe merely of procuring farther information reſpecting the Huſbandry of this diſtrict, and of enabling every one to contribute his mite to the improvement of the country.

The Board has adopted the ſame plan, in regard to all the other Counties in the United Kingdom; and will be happy to give every aſſiſtance in its power, to any perſon, who may be deſirous of improving his breed of cattle, ſheep, &c. or of trying any uſeful experiment in huſbandry.

LONDON, NOV. 1794.

ADAMS 163.10

# INTRODUCTION.

TO render the Account of this County perſpicuous, it is propoſed to give a ſlight ſketch of its Geography, of its Manufactures and Commerce, as well as of its Agriculture: but the main object being a delineation of its Agriculture, that ſubject will be treated more fully; and the others ſlightly touched upon, ſo far only as they have a reference to, and tend in ſome meaſure to illuſtrate, the main ſubject.

Conſidering it as an embelliſhment, and a relaxation of the mind from the fatigue of conſtant attention to one ſubject, the Writer has introduced a few remarks upon Natural Hiſtory and Botany, and even on ſome other ſubjects not immediately or cloſely connected with Agriculture. This being done with brevity will not take up much room, and being generally unconnected with the main ſubject, may (if the BOARD ſhall diſapprove of the introduction of ſuch extraneous matter) be eaſily expunged by a daſh of the pen. He has farther to expreſs his acknowledgments and obligations to the following Gentlemen, Clergymen and others, for their aſſiſtance, recommendation, and the information which he has received from them, and by their means, in this buſineſs:

Mr. BRADBURNE, *Pipehill*, near *Lichfield.*
Rev. Dr. FALCONER, *Lichfield.*
Rev. T. GISBORNE, *Yoxall Lodge*, *Needwood Foreſt.*
Rev. Mr. DICKENSON, Rector of *Blymhill.*
Rev. Mr. WRIGHT, *Bradley*, near *Stafford.*
JOSIAH WEDGWOOD, Eſq. *Etruria.*
EDWARD SNEYD, Eſq. *Bellmont*, near *Leek.*

Mr. Princep, *Croxall.*
Mr. Samuel Wyatt, *Burton on Trent.*
Mr. Lockley, *Boſcobel.*
Mr. Corser, *Buſhbury*, near *Wolverhampton.*
Mr. Miller, *Dunſtall*, near *Wolverhampton.*
Mr. Joseph Hordern, *Saredon*, near *Wolverhampton.*
Mr. Ellison, *Hattons*, near *Wolverhampton.*
Mr. Higgs, *Cronkhall*, near *Wolverhampton.*
Mr. Ferriday, *Ettingſall Park*, near *Wolverhampton.*
Mr. Fowler, *Erdington*, near *Birmingham.*
Mr. Curtis, *Walſall.*
Mr. Harding, *Aſhley Heath*, near *Eccleſhall.*
Mr. Harvey, *Dunſtall*, near *Abbots Bromley.*
Mr. Bowman, at Lord Donegall's, *Fiſherwick.*
Mr. John Smith, *Haunton*, near *Tamworth.*
Mr. William Webb, *Newbould*, near *Burton on Trent.*
Mr. Jenkinson, *Stoke*, near *Stone.*
Mr. Gibbs, *Leek.*

# GENERAL VIEW, &c.

## STAFFORDSHIRE ERRATA.

Page 16. Pariſh No. 36, for " *Sheen*" read *Sheen*.
Page 17, Pariſh No. 14. for " *Chabſey*" read *Chebſey*.
Page 27, line 17, and 18, inſtead of a " *botanical friend has obſerved that*" read (*remark of a botanical friend*).
Page 29, line 16, a comma ſhould be after *Pot-herb,* and a period or full ſtop after the name *Curtis.*
Page 68, line 19, for " *five ſhillings per head,*" read *five pounds.*
Page 96, line 19 and 20, inſtead of " *by fallowing and repeatedly harrowing it fine. All land is* " *ſubject to it,*" read *by fallowing and repeatedly harrowing fine all land ſubject to it.*".
Page 99, line 27, for " *and then*", read *and that.*
Page 111, line 9, for " *lime*" read *time.*
Page 131, line 29, for " *always,*" read *almoſt.*
Page 136, line 25, for " *ſolely*" read *only.*
Page 137, line 10, for " *Wellon*" read *Wetton.*
Page 143, line 2, for " *Kinver is ſtill, &c.*" read *Kinver common is ſtill, &c.*
Page 152, line 20, for " *Barton*" read *Burton.*
Page 165, line 26, for " *will*" read *may.*
Page 165, line 30, for " *Warlow*" read *Warſlow.*
Page 168, line 10, read " *theſe canals extend in length about 200 miles.*"

| | |
|---|---|
| Deduct | 0 19½ |
| Remains meridian altitude of ſun's centre, | 13 55½ |
| Add ſun's declination, | 23 29 |
| Sum, complement of latitude, | 37 24½ |
| Conſequently latitude of Pendeford, | 52 35½ |
| Sun's central altitude ſame day at 11 and 1 o'clock, | 12 40 |

Mr. PRINCEP, *Croxall.*
Mr. SAMUEL WYATT, *Burton on Trent.*
Mr. LOCKLEY, *Boſcobel.*
Mr. CORSER, *Buſhbury*, near *Wolverhampton.*
Mr. MILLER, *Dunſtall*, near *Wolverhampton.*
Mr. JOSEPH HORDERN, *Saredon*, near *Wolverhampton.*
Mr [illegible]

GENERAL

# GENERAL VIEW, &c.

## GEOGRAPHICAL ACCOUNT.

STAFFORDSHIRE is an inland county ſituate near the centre of the kingdom. It is bounded on the north by Cheſhire and Derbyſhire; on the eaſt by Leiceſterſhire; on the ſouth by Warwickſhire and Worceſterſhire; and on the weſt by Shropſhire. It lies, according to Yates, between 52° 23′ and 53° 13′ north latitude, and between 1° 29′ and 2° 27′ weſt longitude from London; this place (Pendeford) being in this ſurvey placed in latitude 52° 37½′ north, and longitude 2° 4′ weſt. I found myſelf, by a pretty accurate obſervation, made December 20, 1790, being the ſhorteſt day, and very fine, about noon, the latitude of Pendeford to be 52° 35½′, which varies from the above account only two minutes. The following are the particulars of this obſervation:

| | ° | ′ |
|---|---|---|
| Sun's meridian altitude to upper limb, | 14 | 15 |
| Deduct ſun's ſemidiameter, | 0 | 16 |
| Deduct for refraction, | 0 | 3½ |
| Deduct | 0 | 19½ |
| Remains meridian altitude of ſun's centre, | 13 | 55½ |
| Add ſun's declination, | 23 | 29 |
| Sum, complement of latitude, | 37 | 24½ |
| Conſequently latitude of Pendeford, | 52 | 35½ |
| Sun's central altitude ſame day at 11 and 1 o'clock, | 12 | 40 |

The greateſt length of Staffordſhire, from the north part of Ax-Edge Common to the ſouth part of Woods Eaves (ſouth of the Severn), from N. N. E. to S. S. W. is ſixty Engliſh miles; and the greateſt breadth, from the junction of the Trent and Dove, near Newton Solney, to the weſt point of Terley Heath, near Drayton, nearly from eaſt to weſt, is thirty-eight miles: the county contains in groſs 1220 ſquare miles, and 780,800 ſtatute acres.

This county was a part of the ancient Cornavii. Under the Saxon Heptarchy, it belonged to the kingdom of Mercia. In the modern political arrangement of the kingdom, it is in the Oxford Circuit; and reſpecting its eccleſiaſtical government, within the dioceſe of Lichfield and Coventry. It is divided into five hundreds: 1. Totmanſlow to the north; 2. Pyrehill to the north-weſt; 3. Cudleſtone to the ſouth-weſt; 4. Offley to the eaſt; and 5. Seiſdon to the ſouth. It contains twenty-two market-towns, one or two other places where fairs are held, one hundred and eighty-one pariſhes, but of theſe more particulars hereafter, and probably about two hundred and fifty thouſand inhabitants.

The air of this county I think ſharp, and the cold perceptibly to the ſenſes greater than in many other counties, particularly than in the neighbourhood of London, having often had an opportunity of making a quick compariſon. The climate too may be termed inclining to wet. The annual rains are, I believe, ſuppoſing them to ſtagnate on the ground without waſte or evaporation, upwards of thirty-ſix inches; thoſe of London do not exceed twenty or twenty-one inches; and at Upminſter, in Eſſex, they are only nineteen inches and a quarter. The rains of Lancaſhire amount to forty-two inches, and thoſe of Ireland to more. I believe it will generally hold good as a rule, that the annual rains on the weſt ſide of the kingdom are at leaſt double to thoſe on the eaſt ſide, which I attribute to its being more expoſed to the condenſation of aqueous vapours ariſing from the vaſt expanſe of the Atlantic Ocean. I have no doubt alſo but that a vaſt deal more moiſture in this county falls on high grounds than on low, the high grounds being, from ſituation, more adapted to break, diſſolve, and attract, the aqueous vapours afloat in the atmoſphere. Accordingly we often find, after rain, great torrents of water puſhing down from the high grounds into the valleys: it is more particularly certain, that the high grounds receive a greater quantity of ſnow in winter than the plains of leſs elevation.

The aſpect of this country is various. The north part riſes gently in ſmall hills, which, beginning here, run through the heart of England, like the Apennines in Italy, in a continued ridge, riſing gradually higher and higher into Scotland, under different names: here called Moorlands; then Peake; then Blackſtone edge; then Craven; then Stanmore; and then parting into two horns are called Cheviots. The Moorland is a rough dreary cold tract, the ſnow lying long on it. The people here obſerve, that the weſt wind always brings rain, but the eaſt and ſouth winds make fair weather, unleſs the wind turns about from the weſt to the ſouth, which then continues rainy. The middle and ſouth part of the county are generally level, or with only gentle eminences. To this however there are ſome exceptions; as the lime-ſtone hills of Dudley and Sedgeley, which furniſh an inexhauſtible ſupply of that material, and great part of it of excellent quality. The Quartzoſe, or Ragſtone Hills of Rowley, furniſh an excellent material for roads and pavements. The hills of Clent and Barrbeacon, beſides many others of leſs elevation, as the high grounds on Cannock Heath, the hills of Buſhbury and Effington, formed chiefly of, or at leaſt containing great quantities of gravel, Kinfare Edge, Tettenhall Wood, and ſome ſituations near Enville, alſo command extenſive proſpects. In this place it may not be improper (as it will not take up much room) to ſtate a few particulars of a ſubject doubtleſs curious, and which, though not immediately connected, is yet not altogether foreign to the buſineſs in hand. Theſe particulars are, the perpendicular elevation of ſome of the high ſummits, medium plains, and lowlands, of this inland county above the level of the tide of the ocean; the writer of this having had many opportunities of aſcertaining theſe particulars, in many caſes very accurately, and in others nearly. The loweſt points of land in the county are, probably, the Severn at Over Areley, and the Trent where it receives the Dove below Burton.

Elevation of ſundry Points of Land in this County, perpendicularly above the Level of the Tide of the Thames at Brentford.

| PARTICULAR SPOTS. | ELEVATION. Feet | In. |
|---|---|---|
| Banks of the Severn at Over Areley, | 60 | 0 |
| ——— of the Tame at Tamworth, | 150 | 0 |
| ——— of the Trent at its junction with the Dove, | 100 | 0 |
| ——— of the ſummit of the Staffordſhire Canal, | 385 | 0 |
| ——— of the ſummit of the Birmingham Canal, | 500 | 0 |
| ——— of the ſummit of the Wyrley Canal, at Eſſington Wood New Colliery, | 566 | 0 |
| Summit of Buſhbury Hill, | 650 | 0 |
| ——— of Barr-beacon, | 750 | 0 |
| ——— of the higheſt peak of Rowley Hills, | 900 | 0 |
| ——— of the Grand Trunk Canal, | 420 | 0 |
| ——— of a hill called Bunſter, near Ilam, in the Moorlands, | 1200 | 0 |
| ——— of Wever Hills, and ſome other of the higheſt peaks in the Moorlands, | 1500 | 0 |

Many of the above are by actual obſervation, and others by eſtimate only.

Hence it appears, that even in the centre of the kingdom few ſpots of plain or cultivated country are ſo much elevated as to be two hundred yards perpendicular above the level of the ſea; and that it by no means follows of courſe, that the higheſt ſpots of ground are far within land, unleſs ſuch inland ſituations contain high hills or mountains, the ſummits of mountains near the coaſt far overtopping the champaign country, though remote from the ſea. I have obſerved, that the Wrekin and Clee hills of Shropſhire, whoſe baſes are upon the lowlands near the Severn, have, nevertheleſs, their ſummits riſing conſiderably above the hills in the ſouth of Staffordſhire, from whence they are ſeen; and the ſummit of Snowden, though near the coaſt, I believe to be ſeveral hundred yards perpendicularly higher ſtill.

## RIVERS OF STAFFORDSHIRE.

THE Severn, though it paſſes through one of the pariſhes of this county, (viz.) Over Areley, can hardly be called a Staffordſhire river, yet it receives the tribute of ſome conſiderable brooks ariſing in the county; the principal river therefore of the county is, the Trent, which, riſing in the Moorlands near Biddulph, takes a winding courſe, firſt ſoutherly, then eaſterly, and laſtly north-eaſterly, and after waſhing the county for a courſe of upwards of fifty miles, leaves it at Burton, where it becomes navigable. In its courſe it receives the following rivers, moſtly ariſing alſo in the Moorlands and the before-named hills, viz. the Dove, the Manyfold, the Hamps or Hanſe; the two laſt of which run under ground a conſiderable way near Ilam and Leyhouſe; alſo the Churnet, the Blythe, the Teyn, and the Sow, after it has received the Penk; alſo, below Wichnor, the Tame, which ariſes in the ſouth of the county, and comes through Tamworth to this place, where it is a conſiderable river. Theſe rivers all fall into the Trent, which conveys them to the ſea. The Stour and Smeſtall run through the ſouth of the county into the Severn.

It might be a curious, and perhaps uſeful ſubject, not unworthy the patronage of the Board, to aſcertain by experiment the quantity of water falling in particular Diſtricts; and the proportion of ſuch quantity abſorbed by the earth and its products, by the atmoſphere, and carried off by rivulets reſpectively. The quantity falling being determined by a weather-gage, the quantity running off ſeems not difficult to determine; for in moſt countries particular outlets may be fixed upon where the ſuperfluous water of a certain diſtrict paſſes off. The extent of ſuch Diſtrict being aſcertained, and a truſty perſon fixed upon near ſuch outlet, to take, at ſtated times, the depth and velocity of the ſtream, from thence the quantity of paſſing water may be eſtimated. I think a ſteady exciſe-officer might be inſtructed to regiſter ſuch account; and that a ſmall addition of ſalary might recompenſe him for his trouble. I know a particular ſpot in Staffordſhire where the flood-water of upwards of one hundred ſquare miles paſſes at a particular bridge, and can go no other way; and doubtleſs ſimilar ſituations may be found in various places. The county, upon the whole, is well watered, and much of its water appropriated and uſefully employed; yet large quantities of it are carried off in waſte by floods.

THE following is a Liſt of the Market-Towns and Pariſhes of this County :

## MARKET-TOWNS, ANCIENT AND MODERN.

1. Stafford, the County-Town, Market-Day Saturday.
2. Lichfield, Friday.
3. Wolverhampton, Wedneſday.
4. Walſall, Tueſday.
5. Burton on Trent.
6. Uttoxeter.
7. Newcaſtle.
8. Leek.
9. Stone.
10. Cheadle.
11. Eccleſhall.
12. Rudgeley.
13. Tamworth.
14. Tutbury.
15. Abbots Bromley.
16. Breewood——very trifling.
17. Penkridge——now declined.
18. Cannock——declined.
19. Betley——declined.
20. Wedneſbury——for fowls, butter, &c.
21. Burſlem, } In the Potteries, now conſiderable
22. Hanley Green, } markets for proviſions.

A LIST

## A LIST OF THE PARISHES OF STAFFORDSHIRE.

[By the term Pariſh is here meant, a tract of land having a place of worſhip, and united in ſome degree by a common or mutual intereſt, without regarding the eccleſiaſtical conſtitution or dependance upon a ſuperior or mother-church.]

In this ſenſe, Totmanſlow Hundred contains forty pariſhes:

1. Alſtonefield
2. Alveton
3. Bagnal
4. Blore
5. Bradley in the Moors
6. Bramſhall
7. Butterton
8. Calton
9. Caldon
10. Caverſwall
11. Cheadle
12. Croxden
13. Checkley
14. Chedleton
15. Dilhorne
16. Draycott in the Moors
17. Endon
18. Elkſtone
19. Ellaſton
20. Flaſh
21. Gratwich
22. Grindon
23. Horton
24. Ilam
25. Ipſtones
26. Kingſton
27. Kingſley
28. Leek
29. Longnor
30. Leigh
31. Mayfield
32. Oakover
33. Onecote
34. Meerbrook
35. Roceſter
36. Sheer
37. Warſlow
38. Wetton
39. Waterfall
40. Uttoxeter.

Pyrehill Hundred contains forty-ſeven pariſhes:

1. Abbots Bromley
2. Adbaſton
3. Aſhley
4. Audley

5. Blithfield
6. Barlaſton
7. Blurton
8. Betley
9. Burſlem
10. Bucknall
11. Biddulph
12. Colwich
13. Colton
14. Chabſey
15. Ellenhall
16. Eccleſhall
17. Broughton
18. Fradſwell
19. Fulford
20. Gayton
21. High Offley
22. Hanley
23. Keel
24. Lane End
25. Muckleſton
26. Maer
27. Madeley
28. Milwich
29. Marſton
30. Newcaſtle
31. Norton in the Moors
32. Stoke on Trent
33. Stafford
34. Stowe
35. Sandon
36. Stone
37. Seighford
38. Standon
39. Swinnerton
40. Ronton
41. Tixall
42. Thursfield
43. Talk on the Hill
44. Trentham
45. Whitmore
46. Woolſtanton
47. Weſton on Trent.

Cuddleſtone Hundred contains twenty-three pariſhes, viz.

1. Acton
2. Baſwich
3. Breewood
4. Bednall
5. Blimhill
6. Bradley juxta Stafford
7. Cannock
8. Coppenhall
9. Caſtle Church
10. Dunſton
11. Forton
12. Gnoſhall
13. Haughton
14. Lapley
15. Norbury
16. Penkridge

17. Rudgeley
18. Sherif Hales
19. Stretton
20. Shareſhall
21. Weſton under Lizzard
22. Wheaten Aſton
23. Churcheaton.

Offley Hundred contains fifty-one pariſhes.

1. Alrewas
2. Armitage
3. Aldridge
4. Burton on Trent
5. Barton under Needwood
6. Bloxwich
7. Barr
8. Clifton Campville
9. Drayton Baſſett
10. Darlaſton
11. Elford
12. Farewell
13. Hanbury
14. Hamſtall Ridware
15. Harbourne
16. Hammerwich
17. Haſelour
18. Harleſton
19. Hints
20. Handſworth
21. Longdon
22. King's Bromley
23. Litchfield St. Chad's
24. Litchfield St. Michael's
25. Marchington
26. Maviſton Ridware
27. Newborough
28. Norton under Cannock
29. Pipe Ridware
30. Pelſall
31. Rolleſton
32. Rowley Regis
33. Ruſhall
34. Smethwick
35. Shenſtone
36. Statfold
37. Tutbury
38. Tatenhill
39. Thorpe Conſtantine
40. Tamworth
41. Tipton
42. Wichnor
43. Whittington
44. Wigington
45. Weeford
46. Walſall
47. Wednesfield
48. Willenhall
49. Wedneſbury
50. Weſt Bromwich
51. Yoxall.

Seiſdon Hundred contains twenty pariſhes.

1. Amblecott and Brierly Hill
2. Areley Over
3. Bilſton
4. Broome
5. Bobbington
6. Buſhbury
7. Codſhall
8. Clent
9. Enville
10. Himley
11. Kinfare
12. Kingſwinford
13. Pattingham
14. Patteſhall
15. Penn
16. Sedgeley
17. Tettenhall
18. Tryſull
19. Wolverhampton
20. Wombourne.

| | | Pariſhes. |
|---|---|---|
| Total | Totmanſlow Hundred | 40 |
| | Pyrehill Hundred, | 47 |
| | Cuddleſtone Hundred, | 23 |
| | Offley Hundred, | 51 |
| | Seiſdon Hundred, | 20 |
| | Total Pariſhes in the County, | 181 |

The population of this county is very conſiderable, and has been of late years much increaſing, a large proportion of its inhabitants being otherwiſe employed than in agriculture, viz. in mines and manufactures. Some of the country pariſhes are almoſt incredibly populous. Sedgeley, for inſtance, contains upwards of ſixteen hundred houſes (I have been told two thouſand), and probably ten thouſand inhabitants. Rowley, Weſt Bromwich, and Bilſton, have, probably, five thouſand inhabitants each. Wedneſbury, Darlaſton, Willenhall, Handſworth, and Tipton, are very populous. The town of Wolverhampton previous to the preſent war, by the enquiries of an intelligent perſon employed in a poor's rate aſſeſſment, contained eighteen thouſand five hundred people; whereas, by a ſurvey in 1750, its inhabitants were only ſeven thouſand four hundred and fifty-four. Walſall now, or, at leaſt, previous to the war, contained, in what is called borough and foreign, which includes part of the neighbourhood, about thirteen thouſand inhabitants. This is proved by a penny dole which has long been given annually to all ranks of people there. The number meaſured by the ſame ſtandard, in the thirtieth year of Henry the Eighth, was one thouſand eight hundred and nine; and in 1686, according to Plott, not exceeding five thouſand five hundred; and in ſuch proportion has the population there been progreſſively increaſing. The Potteries in the neighbourhood of Newcaſtle-under-Lyme employ and ſupport a population of about twenty thouſand people, excluſive of thoſe in other employments: the population there has been moſt rapidly increaſing for many years preceding the preſent war. The pariſh in which I live (Tettenhall), on a calculation from the number of births and burials annually, has increaſed in population during the preſent century as two to five. It is compoſed of people employed both in trade and agriculture; and its preſent number of inhabitants are about two thouſand. Upon a retroſpect of the whole, and conſidering all the data I can collect, I am of opinion, that the population of this county previous to the preſent war was about two hundred and fifty thouſand, and that its population has at leaſt been doubled during the preſent century.

## *AGRICULTURE OF STAFFORDSHIRE.*

### SOIL.

THE ſoil of this county (and probably that of every other diſtrict in the kingdom of equal extent) is various. The arable ſoils may, in general, be divided into, firſt, the ſtiff and ſtrong, clayey (argillaceous); ſecondly, the looſe and light, ſandy (arenaceous); thirdly, although the county has no chalk, yet in the limeſtone diſtricts, lime earth (or calcareous); fourthly, the mixed, or compound ſoil or loam, compoſed of the above with the addition of ſtones and other matter *(terræ compoſitio)*. Alſo, ſome uncultivated and other ſpots contain a thin light black earth, of the nature of peat, generally lying upon gravel: this, when pulveriſed and dry, is very light, but when thoroughly wet is ſo retentive of moiſture as to reſemble mud. The meadow ſoils are in ſome places ſimilar to the arable, with the addition of the ſediment of water when within reach of ſtreams; in other places compoſed of peat earth of different thickneſſes to ſeveral feet, ſometimes containing trunks of trees. This peat earth ſeems to conſiſt principally of the decayed roots of aquatic vegetables, but when drained, conſolidated, and meliorated, by top dreſſing or irrigation, becomes valuable meadow and paſture land: the ſurface of this kind of land will, upon draining, ſink ſeveral inches.

The firſt general diviſion of clay ſoils conſiſts of two varieties: firſt, the ſtrong, ſtubborn, harſh, tenacious clays, or clay loam; ſecondly, the more mild, tractable, or friable marl or loam. The ſandy ſoils are more or leſs light, and in ſome degree intermixed with loam, gravel, or other matter; the mixed ſoils are alſo various, and may be termed loam, gravelly loam, ſandy loam, &c. according to circumſtances.

The excellency of all good ſoils, probably, depends on the component parts being intermixed in a happy proportion; in their being of a ſufficient thickneſs upon the ſub-ſoil or under-ſtratum; in the compoſition of ſuch under-ſtratum being neither too ſolid or compact to retain and ſtagnate all the falling moiſture, nor too porous to let it paſs off too quick; and in the ſurface lying with a proper aſpect to receive the ſolar rays, and to let off the ſuperabundant moiſture. A large proportion of clay gives too much tenacity, and retains too much water. Where ſand predominates, the ſoil being too porous, ſuffers the water to paſs through, or evaporate, and retains too little. Marl and calcareous earth are excellent correctors of both theſe defects. Stagnant water, by its chillneſs and want of motion, is death to vegetation : hence the neceſſity of draining wet ſoils. A due admixture of vegetable matter enriches the compoſt, and the action and heat of the ſolar rays upon the whole maſs, bring on a gentle fermentation, and give life and vigour to the latent and prolific principles of vegetation contained therein. Where Nature has left her work unfiniſhed, it is the buſineſs of art, and of the farmer's profeſſion, to aſſiſt and forward her operations, and to aſſimilate, as much as poſſible, ſuch unfiniſhed ſpots to thoſe which ſhe has left neareſt perfection : he who does this in the moſt rational and complete way, is the beſt farmer.

## DIVISION OF SOILS.

| | Acres. |
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| THE groſs acres of the county, as ſtated before, are about | 780,800 |
| Deduct for roads, lakes, pools, ponds, rivers, canals, cities, towns, villages, buildings and yards, one acre in twenty, | 39,040 |
| Waſte lands, foreſts, woods and impracticable land, | 141,760 |
| Deduct | 180,800 |
| Remains cultivated land | 600,000 |
| Of the waſte and foreſt lands, it is probable that the reclaimable part amounts to | 100,000 |

Of the ſix hundred thouſand acres of cultivated land, in which claſs I mean to include the paſture part of parks, I eſtimate one hundred thouſand acres may be meadow and paſture, and five hundred thouſand acres arable. The arable land may be reckoned, two hundred thouſand acres of clay loam, or more friable mixed loam; two hundred thouſand acres of gravelly or ſandy loams, or other mixed, including calcareous ſoils; and the remainder, or one hundred thouſand acres of light, ſandy, gravelly, or other ſoils, which, though not perhaps wholly adapted to, are yet capable of producing turneps.

The farms of this county are of all ſizes, from twenty acres to five hundred; yet it muſt be acknowledged, that within the laſt twenty or thirty years the conſolidation of ſmall farms has been not uncommon: And indeed a farm of twenty or thirty acres is too ſmall for the ſole employment of a farmer, and only adapted to people retired from buſineſs and preferring to live in the country; or to country-tradeſmen, who, having other buſineſs, do not depend on the ſmall farm for their main ſupport. Farms of the ſmaller ſize are inſufficient to pay a fair rent and maintain a family; and, unleſs the occupier has induſtry and reſolution enough to ſubmit to working regularly for others, generally entail poverty on himſelf and family. Yet, I think, it would be a ſpur to ſteadineſs, exertion, and induſtry, if a proper proportion of ſmall lots of graſs land, ſufficient to keep one, two, or more cows, were added to tenements, and reſerved for the more ſteady and induſtrious labourers, who might in ſervice have ſaved money enough to ſtock ſuch premiſes, and who, upon marrying, might leave principally to the wife the care of ſuch ſtock; ſuch land not on any account to be broken up, except ſuch portion of it, as ſhall be allowed for gardens.

The farms of Staffordſhire are very generally, and with ſcarcely a ſingle exception, employed in a mixture of both paſture and corn ; ſome occupiers inclining one way, and ſome the other, according to circumſtances, and perhaps, in part, according to the diſpoſition of the occupier. The graſs ſeeds generally ſown for laying land to permanent paſture, are, 1. Red clover *(trifolium pratenſe)* ; 2. White clover *(trifolium repens)* ; 3. Trefoil *(medicago lupulina)* ; 4. Ray graſs *(lolium perenne)* ; alſo hay ſeeds collected from the loft, in which every attentive perſon is as careful as he can be to make a good ſelection, by reſerving the hay ſeeds from the produce of lands the cleaneſt from weeds. In addition, many perſons, with a laudable view to improvement, have attempted to introduce freſh graſs ſeeds ; particularly, firſt, the meadow or cow clover : but I believe there are few, if any, inſtances here wherein it has not turned out to be the uſual biennial clover.

2. Burnet *(poterium ſanguiſorba)* has been ſown by many perſons of late years, and by ſome on a broad ſcale. I know it from experience to be a valuable addition to cow paſtures, hardy, and ſtrictly perennial. Cows prefer it to clover, and it is doubtleſs wholeſome for them : ſheep and horſes prefer clover ; and it is by no means ſo productive as the broad-leaved red clover. A very attentive friend and neighbour * of mine, who keeps a very large dairy, and has for ſome years back ſown large quantities of this plant, is ſo very partial to it, that he would this year have ſown ten hundred weight of the ſeed, could he have procured it. It is certainly a good mixture with other herbage, with which it but little interferes, drawing its nouriſhment deep from the earth by a long tap root. It is a native of ſome of the Midland Counties, upon dry calcareous ſoils, particularly Rutlandſhire, where it abounds ſpontaneouſly in common fields, road ſides, and even

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* Mr. Miller.

upon commons wholly uncultivated, it is a very different plant to the meadow burnet (*ſanguiſorba officinalis)*, ſpringing out and flowering ſome months earlier. I have ſince found it indigenous in the Moorlands of Staffordſhire, particularly on the Wever Hills, and between Wetton and Warſlow.

3. Sainſoin (*hedyſarum onobrychis*) has been tried, but has not ſucceeded, and the ſoil is probably not adapted to it.

4. Lucern (*medicago ſativa*) has had ſeveral ſmall experiments. It requires cleaning with a good deal of care for the two or three firſt years, after which you can ſcarcely deſtroy it. I had early this ſpring a garden bed of this plant dug under (being tired of it), which notwithſtanding is now ſhooting out vigorouſly. There is ſome reaſon to diſpute its ſuperiority to red clover, either in quality or bulk of produce.

5. Rib graſs (*plantago lanceolata*) is alſo ſown in conſiderable quantities, and by many approved as a good mixture with clover and ray graſs. There is good authority for aſſerting that cattle will not eat it alone; but it is believed to be a grateful mixture with other herbage.

None of the native individual graſſes have, to my knowledge, been cultivated in this county, except the ray graſs before named, and the oat graſs (*bromus mollis*), though many of them are apparently much more worthy of it. In addition to the cultivated plants before named, the following is a liſt of our principal ſpontaneous paſture and meadow herbage, in which each ſpecies is placed in rank according to the writer's conception of its merit; but ſuch ſuperiority being matter of opinion, may poſſibly be varied and otherwiſe decided by future experience and obſervation.

1. Meadow graſſes (*poa pratenſis et trivialis*).

2. Annual meadow graſs *(poa annua)*, a ſweet and fine graſs, but not very productive, might with propriety be termed *poa quadrans annua*, as it will produce and reproduce itſelf by its own ſeed four times a-year. Could the ſeed be procured in ſufficient quantities, it is certainly well worthy of cultivation, producing in quick ſucceſſion an infinity of blades of graſs, and being a ſweet and fine paſturage.

3. Meadow feſcue (*feſtuca pratenſis*).

4. Foxtail graſs (*alopecurus pratenſis et agreſtis*).

5. Soft graſs (*holcus lanatus*).

6. Dogstail graſſes (*cynoſurus criſtatus et echinatus*).

7. Vernal graſs (*anthoxanthum odoratum*); fine, ſweet and early, but not very productive.

8. Rough cock's-foot graſs (*dactylus glomeratus*); coarſe but very productive, and by ſome much eſteemed; probably makes good hay intermixed with the other finer graſſes.

9. Water meadow graſs (*poa aquatica*) grows very tall, to ſix feet high and upwards; extremely productive; very common by the ſides of ſtreams, in hedges, and ſometimes in pretty broad patches on water meadows. Mr. Curtis informs me this graſs is cultivated in the Iſle of Ely, and it is probably well worthy of attention in proper ſituations.

10. Meadow oat graſs (*avena pratenſis*).

The above graſſes are certainly all well worthy of trial in cultivation; the following alſo are common in meadows and paſtures.

11. Bent graſſes of ſorts (*agroſtis's*, principally the *capillaris alba et ſtolonifera*). Theſe, though valuable in meadows, are very noxious and troubleſome in arable land, being the baſis of that curſe to the plough farmer, the black or beggarly couch or ſquitch graſs. Theſe graſſes are ſo hardy, that they will grow in any ſoil moiſt or dry; and the more
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land is run out, beggared, or impoveriſhed by hard tillage, the more they will run in the root and abound.

12. Tall oat graſs (*avena elatior*). This, though a troubleſome weed in arable land, (being the knobby or bulbous-rooted couch graſs) is yet probably worthy of cultivation in meadows, being very hardy, productive, and flouriſhing in all ſeaſons; it makes good hay intermixed with other finer graſſes.

13. Dogs, couch or ſquitch graſs (*triticum repens*); not very common in meadows and paſtures, but chiefly abounding in gardens and hedges. The common ſquitch graſs of arable lands has been often erroneouſly called by this name.

14. Flote graſs (*feſtuca fluitans*); generally growing in water, it is a ſweet and good herbage, and very productive. Many a poor old horſe has been bogged in ſearching for this graſs, of which they are remarkably fond. A botanical friend * has obſerved, that geeſe are very fond of the ſeeds of this graſs, and well know where to look for them.

The other moſt common graſſes are, Timothy graſs (*phleum pratenſe*), hair graſs (*aira cæſpitoſa*), quake graſs (*briza media*), brome graſs (*bromus erectus, arvenſis & ſterilis*), meadow barley graſs (*hordeum pratenſe*), creeping ſoft graſs (*holcus mollis*): alſo in wet, boggy, or ſwampy ſituations, various ſorts of ſeg graſſes provincially hard graſs, iron graſs, carnation graſs (*carex's*): theſe, upon draining and top-dreſſing their native bogs, generally give way to the more valuable graſſes.

The other principal meadow herbage valuable for hay and paſturage is, 1. The meadow or cow clover (a variety of the *trifolium pratenſe*); the ſeed of which is profeſſed to be ſold under the name of cow graſs.

2. Long-leaved perennial clover (marl graſs of HUDSON, *trifolium flexuoſum*); common in hedges and ditch banks in

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the clayey ſoil in the pariſh of Blymhill. Being perennial, and growing ſpontaneouſly in ſtrong ſoils, the Rev. Mr. DICKENSON highly recommends the cultivation of it in ſuch ſoils mixed with common clover and ray graſs. This plant is alſo common here upon mixt gravelly loam, ſometimes in ſhady, and ſometimes in open ſituations; but having a diſpoſition naturally to propagate itſelf by running in the root, I am afraid its ſeed will not ripen in ſufficient quantity for any conſiderable ſcale of cultivation: the attempt of raiſing its ſeed is however well worth making.

3. Trailing trefoil (*trifolium procumbens*); a ſweet, fine and good herbage.

4. Bird's foot trefoil (*lotus corniculatus*); in all ſituations open and ſhady, moiſt and dry, apparently worthy of cultivation. A ſingle attempt of mine to raiſe a garden bed failed; the ſeed of my own gathering never vegetated.

5. Perennial tufted vetch (*vicia cracca*); excellent paſturage, and a good mixture in hay; not uncommon in hedges and meadows; highly worthy of cultivation. This perennial vetch is diſtinguiſhed from the common annuals by its long fruit-ſtalk, upon which the flowers and pods are ſupported at a diſtance from the ſtem; whereas thoſe of the annuals are ſhort and cloſe to the ſtalk.

6. Meadow vetchling (*lathyrus pratenſis*); in hedges and meadows; common. For the cultivation of this plant a premium has been offered, I believe, by the Bath Agriculture Society; yet there is reaſon to think that cattle are not fond of it, I having often obſerved it untouched on the hedge-ſide of a ſtocked paſture: it is probably moſt proper as a mixture in graſſes for hay, and poſſibly eaten by cattle mixed with graſſes.

7. Meadow burnet (*ſanguiſorba officinalis*); common and plentiful in ſome meadows; alſo growing very luxuriantly in cold and very poor wet upland, particularly on Bentley eſtate near Walſall, and between Walſall Wood and Cannock Heath: a hint from nature that it ſhould be cultivated on ſuch land, as it certainly ſhould, if its ſeed can be preſerved in ſufficient quantity.

8. Meadow ſweet (*ſpiræa ulmaria*); coarſe, but not diſeſteemed by ſome. The farina or duſt of the ripe bloſſoms of this plant, which is very abundant, is, I have been told, an excellent ſtyptic, and has been uſed with great ſucceſs in ſtopping hæmorrhages.

9. Cow weed (*chærophyllum ſylveſtre*) has an uncouth and weed-like appearance, reſembling hemlock, but paler in colour; is very common in ſome meadows and paſtures, and has been uſed as a pot herb. According to CURTIS, cows are ſo fond of it, that when a paſture is overrun with it, as is often the caſe about Dudley, they always turn them in to eat it up, as obſerved by Mr. WAINWRIGHT, in WITHERING's Botany. It is very common about Wolverhampton and Wednesfield. Cows eat it greedily, and I believe it is wholeſome for them.

10. Meadow ſorrel (*rumex acetoſa*); common in meadows. All ſorts of cattle eat it, and I doubt not that its acid is grateful and wholeſome to them, and I believe it to be good herbage.

11. To theſe I ſhall add the crowfoots (*ranunculus's*), ſo very abundant in our meadows and paſtures, and which, tho' in themſelves ſo acrid and pungent, are notwithſtanding moſt certainly a grateful and deſirable admixture. They ſeem intended as ſeaſoners and correctors, and to be adapted to uſes in the animal œconomy ſimilar to that of ſalt, muſtard, pepper and vinegar at our tables; to correct the flatulent or pu-

trid qualities of the more palatable and luxuriant diſhes on the great table of nature. It is ſaid in WITHERING'S Botany of the *ranunculus acris*, that "cows and horſes leave "this plant untouched, though their paſture be ever ſo bare." I believe this to be only true of the flower ſtem, or when there is not a ſufficient admixture of other more palatable herbage.

The following I conſider as neutral plants, or ſuch as are neither worthy the farmer's attention to encourage their growth, nor his efforts to deſtroy: the foliage of many of them is eaten by cattle without injury, either green or in hay, in common with other herbage.

1. Dandelion (*leontodon taraxacum*); very common; conſiderably diuretic; has probably a good effect upon cattle, from that quality, at their firſt going to graſs.

2. Daiſy (*bellis perennis*).

3. Daffodil (*narciſſus pſeudo-narciſſus*).

4. Harebell, Engliſh hyacinth (*hyacinthus non ſcriptus*).

5. Fritillary (*fritillaria Meleagris*). This very curious and rare flower adorns in great profuſion ſome meadows about one mile from Blymhill, in the pariſh of Wheaten-Aſton, as obſerved to me by the Rev. Mr. DICKENSON.

6. Cowſlip (*primula veris*).

7. Primroſe (*primula vulgaris*).

8. Lady-ſmocks, ſeveral ſorts (*cardamines*); principally the *pratenſis* and *hirſuta*; the foliage probably wholeſome food.

9. Wood or meadow anemone (*anemone nemoroſa*); very common here in meadows; the flowers fold up in a curious manner againſt rain; the whole plant is acrid: when ſheep that are unaccuſtomed to it eat it, it brings on a bloody flux, as obſerved in WITHERING'S Botany.

10. Gooſe graſs (*galium paluſtre & uliginoſum*).

11. Biſtort (*polygonum biſtorta*); common in moiſt meadows; alſo in very high paſture ground at Effington, in the pariſh of Buſhbury. The root is one of the ſtrongeſt vegetable aſtringents, as WITHERING informs us. If it would tan leather it would be worthy of cultivation, the root being productive and the ſpecies prolific. This plant in ſome places wholly occupies large patches of ground, to the injury of better herbage.

12. Cinquefoils (*potentilla verna & reptans*).

13. Meadow rue (*thalictrum flavum*); in a meadow on my farm in conſiderable quantity.

14. Valerian (*valeriana officinalis*).

15. Orchis's, ſeveral ſorts.

16. Meadow boot (*caltha paluſtris*).

17. Ladies mantle (*alchemilla vulgaris*).

18. Yarrow (*achillea millefolium*). Sheep and cattle eat it, and it is recommended for cultivation on poor land, by ANDERSON.

19. Reſtharrow (*ononis arvenſis*); rather to be extirpated than encouraged, though cattle will eat it when young, and it is very productive. The roots of it are very troubleſome in arable land, being ſtrong, and almoſt ſtopping the plough. In ſome of the chalk counties I have obſerved a worſe kind ſtill, *viz.* the prickly, thorny, or ſpiny reſtharrow (*ononis ſpinoſa*), but I have never found any in Staffordſhire except the ſmooth plant firſt named.

20. Yellow rattle (*rhinanthus criſta galli*).

21. Red rattle or louſe wort (*pedicularis ſylvatica*). This ſhould rather have been claſſed amongſt weeds or noxious plants, as WITHERING ſays of it, that if the healthieſt flock of ſheep be fed with it they become ſcabby and ſcurfy in a ſhort time, the wool gets looſe, and they will be overrun

by vermin: it is, doubtleſs, a bad plant, but may be weakened or deſtroyed by draining the land.

22. Eyebright *(euphraſia officinalis & odontites)*.

23. *Veronica's*, ſeveral ſorts.

24. Purging flax *(linum catharticum)*.

25. Centaury *(Chironia centaurium)*.

26. White ſaxifrage *(ſaxifraga granulata)*; on meadows in the Moorlands.

Theſe are the moſt common, many others are omitted. Some of them have their known uſes; to others no attention is paid, but what they claim from the beauty of their flowers; and perhaps, as Dr. WITHERING has obſerved, a diſplay of beauty may have been in ſome meaſure the deſign of the Great Creator.

Weeds, or noxious plants, common in paſture and meadow land, which the farmer's induſtry ſhould be employed in deſtroying and extirpating are,

1. Dock *(rumex criſpus)*; to be deſtroyed only by perſeverance in rooting up.

2. Thiſtles of ſorts *(carduus's)*, particularly the *lanceolatus paluſtris* and *pratenſis*: they ſhould be cut off within the ground or rooted up.

3. Nap weed *(centaurea nigra & ſcabioſa)* ſhould be rooted or cut up, being uſeleſs and unſightly.

4. Ramſons *(allium urſinum)*, meadows at Horſebrook and elſewhere, gives a garlick flavour to milk.

5. Gooſe tanſy, ſilver weed, or feathered cinquefoil *(potentilla anſerina)*; common in many paſtures, but generally untouched by cattle; ſhould therefore be extirpated to make room for better herbage.

6. Ruſhes of ſorts *(juncus's)*; a ſure indication of ſtagnant water, and that the land wants draining.

7. White dead nettle *(lamium alba)*.

8. Hog weed, or cow parſnip (*heracleum*). This plant (Variety 2. the *anguſtifolium*) is very abundant in an upland mowing meadow near Dudley Caſtle; and though I believe cattle will eat it without injury, yet it is certainly too coarſe and weed-like to be ſuffered to abound in well managed land.

9. Wild carrot (*daucus carota*).

10. Dog's mercury (*Mercurialis perennis*); very common in the ſides of hedges. WITHERING's Botany ſays this plant is noxious to ſheep; which if true, ſome pains ſhould be beſtowed in its extirpation.

11. The common curſed or way thiſtle (*ſerratula arvenſis*); every where.

The leading features of improvement to be effected by agriculture upon meadow and paſture land ſeems to be,

1. By draining of all boggy, ſwampy, and moraſſy ſpots, either by open or hollow drains.

2. By improving the herbage where rough and coarſe, either by weeding and top-dreſſing, or by pulverizing and ſeeding down with a judicious ſelection of proper ſeeds, and laying the ſurface in a form and diſpoſition to clear itſelf of ſurface water, and receive future improvement.

3. By extending as much as poſſible the practice of irrigating the ſurface of all land capable of that improvement, with water judiciouſly applied, and properly taken off.

4. By top-dreſſing with the moſt ameliorating manures that can be procured.

5. By ſtocking at proper times, and with a properly mixed ſtock; by which management the herbage being cloſely bitten will be kept fine, and the ſurface not being trodden in or poached upon will be kept regular. There are few ſpots ſo barren or ungrateful which by this mode will not be made

uſeful meadow and paſture land. Conſiderable attention is at preſent paid to theſe ſubjects by many ſpirited and judicious managers. The particular points above alluded to that ſeem moſt capable of being extended are the three following:

1. Draining.
2. Irrigation.
3. Improvement of ſtock.

## DRAINING.

OF this moſt eſſential improvement of meadow and paſture land, as well as arable, much remains to be done, though great exertions have been made in it of late years. The practice moſt approved here is, after having opened a ſufficient number of ditches or main drains to a proper depth, to cut from and into them a number of drains of about fourteen inches wide at top, to four or five inches wide at bottom, and three feet deep; then to fill up theſe, firſt, with a ſmall layer of heath or ling; ſecondly, with pebbles or rock ſtone one foot thick; thirdly, with another layer of ling; then to place the firſt ſpit or turf reverſed upon the upper heath or ling; and to fill it up and cloſe the whole with part of the ſoil, and to ſpread the remainder of the ſoil on the ſurface of the land ſo drained. Cloſe drains thus executed will laſt a great length of time if properly done, and if the open drains ſhall be kept properly cleanſed out. Other methods are alſo uſed; as that of draining with hollow bricks; that of forming the bottom of the drain with a bearing on either ſide, and a narrower open ſpace below, with the firſt ſpit or ſod of turf inverted and returned, and the drain filled up with the ſoil. Theſe are practiſed with good effect; but the firſt-named method is moſt generally ap-

approved, in which, where ſtones are ſcarce, wood is ſometimes ſubſtituted. The improvement is generally reckoned to pay the whole expence in two or three years, and within my acquaintance is ſo generally practiſed, that there are few individuals who do not do more or leſs of it every year. This opinion is corroborated by others, particularly the Rev. Mr. WRIGHT of Bradley, who ſays, " more attention has been " paid to that important article of draining lands within the " laſt twenty years, than in centuries before. Covered drains " are commonly uſed." Attempts too have been made to tap ſprings, by boring into them, by Mr. ELKINTON and others, and ſometimes with ſucceſs. Mr. BRADBURN from much experience thinks the beſt method of under-draining to be with hollow bricks, which he ſays are more durable, and ſafe from being injured by vermin, than any other method.

## IRRIGATION.

IRRIGATION, or the improvement of land by watering, is, or may be, a very important and extenſive part of agriculture; and though the advantages to be derived from it are generally admitted and well known in this county, at leaſt by all intelligent farmers, yet it is by no means in general carried to the extent of which it is capable; many ſtreams being ſuffered to glide quietly down their own channel, which might eaſily be drawn over the adjoining lands, to their great improvement. This omiſſion is in part owing to neglect; in part to the jealouſy of millers and other perſons intereſted in the ſtreams; and in ſome degree to the beſt methods of extending this application of water not being generally and ſufficiently underſtood. The induſtry of many individuals is, however, very properly and ſucceſsfully exerted in this very commendable ſpecies of improvement.

Reſpecting a ſyſtem for irrigation, no general one can apply to particular caſes. Different modes of ſpreading the water muſt be adopted, according to different circumſtances of ſituation and form of ſurface. In all caſes where a ſtream naturally falls down a valley, and the ſides of ſuch valley conſiſt of eaſy and regular declivities, the beſt way undoubtedly is to draw a ſufficient quantity of water nearly upon a level, along a main carrier; ſuch water to be let out of the ſaid main carrier at pleaſure, by ſluices conſtructed in different places in the ſides thereof, into floating gutters; ſuch floating gutters being cut on a level along the ſides of the declivities, one below another. Theſe floating gutters will collect the water from the ſpaces of land above them, and, if well conſtructed, deliver it very regularly upon the ſpaces below each of them reſpectively. The watering in this caſe will require very little attendance, except that of opening and cloſing the ſluices in rotation, ſo as to irrigate different parts of ſuch land ſucceſſively. The gutters too will require an annual cleanſing or ſcouring out, otherwiſe they will choke, and grow up with graſs.

The particular mode of action or operation by which land is benefited by watering, has not perhaps yet been ſatisfactorily explained: yet it is an eſtabliſhed and well known fact, that all waters (except ſuch as are highly putrid) produce a good effect upon land, in ſome degree proportioned to their rapidity or briſkneſs of motion. Thus common water ſuffered to ſtagnate upon, or dribble in ſmall quantities over land, will encourage the growth only of ruſhes, *carex's* (ſeg-graſs), and other coarſe *aquatics*, and weaken if not deſtroy the fineſt and moſt valuable graſſes. The ſame water driven over the ſame land with a briſk motion, and the ſurface left to dry at intervals, and expoſed to the ſun and atmoſphere, will have a direct contrary effect: the valuable graſſes will flouriſh, and the aquatics be weakened or deſtroyed. Hence it ſhould ſeem, that the good effects of watering are in part produced by mechanical operation, by moiſtening and tendering the ſurface; which circumſtance, combined at intervals with the effects of the ſun and atmoſphere, brings into action the latent principles of vegetation in plants; which principle would have lain dormant, under the influence of chilling or ſtagnant water; or would have been locked up by the matting of turf on the ſurface, had not ſuch turf been ſoftened, and made eaſily penetrable by moiſtening its ſurface. The coarſe aquatics being hardier, vegetate in a leſs degree of heat. They ſeem intended by nature to fill up thoſe vacancies which are yet unprepared for the production of the more valuable tribes, upon this principle in her vegetable œconomy, that a bad plant is better than none: yet upon the proper application of human induſtry they always decline, and give way to thoſe of ſuperior value.

Every one knows the neceſſity there is (previous to improvements by irrigation) of diſcharging the ſtagnant water from, or from near, the ſurface of all lands intended to be ſo improved, by hollow drains or otherwiſe.

As the benefit to be derived from irrigation depends ſo much upon the watering being effected with a briſk motion, and not continued for too long a time, the great deſideratum in this ſpecies of improvement ſeems to be the introduction of reſervoirs conſtructed ſo as to contain large quantities of flood water; which water ſo collected may be ſucceſſively and at pleaſure diſtributed upon any land below its ſurface, and continued with ſuch velocity, and for ſuch length of time, as may be thought proper.

This idea, as applicable to agriculture, is I believe novel, and may be treated as viſionary; but I am ſo thoroughly convinced of the great advantages to be derived from it, that I will venture a prediction of its being in ſome future time practiſed to a great extent. The practice will be much facilitated by the conſtruction of dams being ſo well and ſo commonly underſtood, in conſequence of the number of navigable canals which have been, and are ſtill executing. A reſervoir of a few acres, and of two yards average depth, may be conſtructed, at from ten to twenty pounds per acre, according to circumſtances of ſituation. Such reſervoirs as a fiſhery (under proper management) would be equal or ſuperior in value to an equal breadth of land, and the ſurface water to a certain depth may be drawn down for the purpoſe of irrigation at pleaſure.

Upon this ſubject of water the following extenſive idea is thrown out by an ingenious gentleman *, high in his profeſſion as an engineer; which is, that nine parts in ten of the waters of the kingdom at preſent run away in waſte, great parts of which might be uſefully employed; nay farther (putting expence out of the queſtion), that every ſtream in the kingdom may be made to run equally through the whole year. This poſition, however extraordinary, is eaſily demonſtrable; for if upon any given ſtream one or more reſervoirs be made capable of containing its flood water, and through the dam or dams be laid a pipe or pipes, whoſe apertures will juſt diſcharge the average produce, the buſineſs is done. And though there may be no probability of this buſineſs being ever brought to ſo great a nicety; yet from hence ſome idea may be formed of the prodigious extent to which improvements by water may be carried.

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* Mr. Jessop.

With this ſubject, and that of forming reſervoirs for the purpoſes of agriculture, is connected another, of great importance in domeſtic and commercial œconomy; namely, the having an extenſive command of the application of water to all mechanical purpoſes wherein ſuch application will anſwer better than for irrigation of land, and thus, as it were, arreſting every drop of water that falls from the heavens, and rendering it in the moſt extenſive way ſubſervient not only to the immediate ſubſiſtence of man and beaſt, and the improvement of land, but even having the reſidue ſolely at command for the purpoſes of ſhortening manual labour: ſuch ſyſtem would certainly be an important addition to the powers required in many of our mechanical operations, and of great importance in a manufacturing country.

A copy of part of the above being ſent to Mr. JESSOP, I have received from him the following Paper, which I had never ſeen before.

## OBSERVATIONS ON THE USE OF RESERVOIRS FOR FLOOD WATERS.

THE rapid improvements which have for ſome years paſt been made in the agriculture and commerce of this country, and the happy effects derived therefrom, naturally excite a deſire to inveſtigate every means by which they may be continued and increaſed.

Among the many cauſes which have combined to promote our proſperity, the facility of intercourſe by inland navigation is a great and leading feature. All unite in admitting this as a general poſition; but many, from private motives, or miſtaken opinions, have too often prevailed in preventing the execution of uſeful projects, which, if they could have been effected, would have greatly contributed to the national benefit derived from thoſe already eſtabliſhed.

Among the obſtacles that ſtand forward, none are more conſpicuous, nor ſo generally urged, than the want of water in dry ſeaſons. It uſually happens, that where canals are moſt wanted, manufactures or agriculture having already taken poſſeſſion of the ground, and occupied the ſtreams of water, it is plainly to be foreſeen, that, unleſs ſome means are deviſed to reconcile this competition, thoſe deſirable improvements muſt be crippled in their growth, and ſtop long before the age of maturity.

It can hardly have eſcaped any one's obſervation, that ſtreams of water uſed for the purpoſe of working mills, or the more valuable purpoſe of watering meadows, in the few inſtances where this has been practiſed, while they have a ſcanty ſupply in ſummer, they generally diſcharge in winter ſuch ſuperabundance as frequently to do material injury.

There are, in ſome parts of this iſland, exceptions to this general poſition. Where the ſoil is porous, and the ſubſtrata ſo open as to abſorb the rains as they fall, there are no floods: the pores and fiſſures of the earth form reſervoirs or regulators to the ſtreams; they preſerve the winter waters, and ſo equalize the diſcharge, that there is but little difference between their winter and ſummer ſtate; but in clay or other ſimilar ſoils, ſo little is abſorbed, and ſo much ſuddenly glides off from the ſurface, that the extremes of ſcarcity and exuberance are the neceſſary conſequences.

It is now well underſtood, that all natural ſprings derive their ſupply from the waters of the atmoſphere; and they may fairly be conſidered as the diſcharges of natural reſervoirs; it is immaterial whether thoſe reſervoirs may be compoſed of large cavities, or minute fiſſures.

Leaving expence out of the queſtion, it is poſſible to conceive (however extravagant the idea may appear), that the waters of all rivers might by art be nearly equalized throughout the year: but it will be ſufficient to prove that this is practicable, if applied to ſmall rivulets or brooks, particularly where Nature holds forth a temptation, by furniſhing deep ravines, or capacious hollows on the ſurface of the ground, capable, at a moderate expence, of being made to contain large quantities of water.

We are taught, from the ſimple inſtinct of animals, the provident leſſon of ſtoring up the ſuperabundant ſupplies of one ſeaſon for the wants of another. Neceſſity has compelled mankind, in many countries, to follow their example. In hot climates, the inhabitants could hardly exiſt without ſtoring up the waters of winter for their uſe in ſummer *.

There are inſtances in this country where canals are in want of water in ſummer, while the brooks that ſupply them diſcharge floods, in winter, in one day, ſufficient for the ſupply of the whole year.

Thoſe who entertain doubts of the practicability of making reſervoirs ſufficient for the ſupply of canals, ſtate their objections under three heads: the expence; the want of ſufficiency of water; and the uncertainty of making ſuch reſervoirs to retain it.

When the neceſſary magnitude is aſcertained, the expence is a ſubject of plain calculation; and it is eaſy to determine whether the project, to which it is to be applied, will bear the expence. There have been ſeveral inſtances, where the expences of repelling an oppoſition from mill-owners to a

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* At Alicant the King of Spain has made a reſervoir, the water of which, for the uſes of ſummer agriculture, bring him in a revenue of 2000 l. per annum.

Bill in Parliament, would have been more than enough to have made ſufficient reſervoirs.

Whether they can be filled with water may be known before they are undertaken, by an enquiry and meaſurement of the diſcharge in winter.

The waſte of water from a reſervoir is in two ways; by exhalation, and by leakage. The firſt, in a dry ſummer, would conſume about nine inches in depth from the ſurface; the making the head nine inches higher than otherwiſe neceſſary would compenſate for this. The leakage would be in few caſes (where it would be prudent to attempt the ſcheme at all), even upon ſmall ſtreams, more than equal to the ſummer ſupply; and whether the water may be diſcharged by leakage, or by a pipe or artificial diſcharger, if they ſhall both diſcharge into the ſame channel, is not very material. In clay or other ſoils where ruſhes grow, there will be no ſenſible leakage; and in ſoils more open, the pores of the ſoil would be an extenſion of the reſervoir; and in caſes where it might be neceſſary to diſcharge conſtantly from the reſervoir a quantity equal to the ſummer ſtream, it would for a while ſupply that diſcharge.

Even in extreme caſes of leaky ſoils, if there were any ſudden floods, the reſervoir would at leaſt prevent their ſudden diſcharge; but where the ſoil and ſtrata are ſo cloſe as to abſorb little, and cauſe ſudden floods (and it is to theſe caſes that reſervoirs are peculiarly applicable), there is little reaſon to apprehend leakage.

The writer of this has lately had an opportunity of experiencing the effect of a ſmall reſervoir (not yet compleated) as a regulator to a ſtream. It covers at preſent about twenty acres, and is made on a ſmall brook which, in dry ſeaſons, does not furniſh more water than would run through an aperture of an inch in diameter; but is ſubject to floods, which can hardly be diſcharged by a pipe of three feet in diameter.

There is fixed under the head of it an iron pipe of ſix inches bore, which during the laſt winter has almoſt conſtantly been open; and diſcharged a quantity unequal no otherwiſe than from the difference of preſſure by the riſing and falling of the water in the reſervoir at the different intervals of rainy and fair weather; and when the reſervoir ſhall be enlarged, on the one hand the meadows below will never be overflowed, and on the other hand the reſervoir will furniſh, in the dry part of ſummer, *at leaſt twenty times* the quantity of water daily that the brook would otherwiſe afford.

There is now depending in Parliament a Bill for making a navigable canal through the Vale of Belvoir to the Town of Grantham, where the ſoil is almoſt wholly a firm tenacious clay, and will not require above half the water to ſupply it, which is neceſſary for canals in other inſtances.

The country is ſubject to an extreme ſcarcity of water in ſummer, and to great ſuperabundance in winter; and every circumſtance is favourable to the intention of ſupplying the canal by artificial reſervoirs. It is therefore earneſtly hoped, that thoſe who might be induced by their doubts to repel the intention, under the idea, that becauſe no canal hath hitherto been *totally* ſupplied by reſervoirs, therefore it muſt be impracticable, will give ſome credit to thoſe, who, on well-grounded information, have adviſed the meaſure; and that they will ſuffer it to be effected.

It is hoped, that the execution of a canal upon this ſyſtem may tend to promote the extenſion and continuance of thoſe improvements in commerce and agriculture, on which ſo greatly depend the proſperity of this country; and which, in many inſtances, already have been checked, by neglecting to uſe the aſſiſtance of art in remedying the defects, or rather in uſing or improving the bounties of Nature.

Written in May 1792.

W. JESSOP.

Farther, reſpecting the particular ſubject of applying water to the improvement of land, though this practice is by no means carried to the extent of which it is capable, and large quantities of flood-water are loſt (which in the tenacious clay ſoils that abound over a conſiderable part of this country can be retained in no other way than by artificial reſervoirs), yet conſiderable exertions are made in this buſineſs by many perſons, and omitted by few who have the means of doing it; almoſt every occupier who has a ſtream through his meadows, beſtowing conſiderable attention to it in floods. Amongſt others, my neighbour Mr. MILLER, of Dunſtall near Wolverhampton, has upwards of one hundred and eighty acres of land capable of irrigation; and when water abounds, it is applied to this purpoſe in various ways. Upon his farms are two mill-ponds, and the mills kept in uſe in his own hands. The jealouſy of the millers below upon the ſame ſtream prevents his applying it to this purpoſe at any other time except when there is plenty of water; on which occaſion he often rakes up the mud of his mill-ponds, by ſmall harrows dragged in them to and fro by ropes; which mud is by this means ſent in the water over the land; which water is drawn in floating gutters to every part of the land the level will admit; and the conſequence is an early and plentiful hay-harveſt, often after ſpring-grazing. There are few inſtances in this county of land formed artificially for the purpoſe of receiving water by irrigation, by being laid in broad ridges; and the few I have ſeen would certainly induce any attentive perſon to reject the method. The ſoil is ſeldom left equally upon the land; and the length of time loſt before a good turf can be reſtored, is a great objection to the practice: and as the water may, in almoſt all caſes, be as well applied upon an even ſurface, variouſly diſpoſed, as land often is by nature, I think ſuch mode of application is to be preferred to breaking the turf, and giving it a new form. Upon the eſtate of Lord Bagot, adjoining Tedbrook, I obſerved a conſiderable tract of formerly moraſſy land, after draining and being made ſound, prepared for irrigation in a very ingenious way; without altering the natural diſpoſition of the turf, the buſineſs effectually done, and meant to be gradually and progreſſively extended down the valley. At Stoke, near Stone, about fifty acres of meadow land are watered in a very ſuperior ſtyle, from the Trent and from land floods, by Meſſrs Jenkinson. Here the main gutters or carriers are conſtructed with ſome fall down the land; and from them are cut ſideways a proper number of floating gutters upon an exact level. Below each of theſe floating gutters, in the main carriers, are fixed wooden trunks laid in a puddle, with a ſliding paddle to each; by means of which the water is either kept back along the floating gutters, and ſo forced upon and over the land, or drawn down the main gutters and off the land at pleaſure: the gutters are generally conſtructed deep enough to drain the land, when not uſed for floating. Theſe meadows have been much improved by this practice, which commenced about ſeven or eight years ago; before which, I was informed, they were of little value; but at preſent, after ſpring-grazing, they mow a full crop of hay, and are improving every year.

## STOCK.

THE profitable ſtock of the Staffordſhire, and generally of all Engliſh farmers, conſiſts of, firſt, horned cattle; ſecondly, ſheep; thirdly, horſes; fourthly, hogs.

Firſt, Horned cattle. The horned cattle of this county are very generally of the long-horned breed, varying in value and quality in proportion to the attention of the breeder and his reſources for keeping. It is a dogma almoſt eſtabliſhed into a maxim by many experienced farmers of the old ſtamp, that "all breed is put in at the mouth;" whilſt the modern breeder upon the BAKEWELLIAN ſyſtem will boaſt that the merit of his breed conſiſts in their capability of doing well upon the leaſt quantity of food of the ordinary kind. There is no doubt but both parties have wandered beyond the true bounds of nature; as all good ſtock muſt be both bred with attention and well fed; and perhaps it is neceſſary that theſe two eſſentials in this ſpecies of improvement ſhould always accompany each other; for without good reſources for keeping, it would be in vain to attempt ſupporting a capital ſtock, and with ſuch reſources it would be abſurd not to aim at a breed ſomewhat decent in quality. The cattle ſtock of this county hath for years back been (and are at preſent) in ſome degree improving; but all general improvements muſt be gradual and a work of time. It is not in the power of every farmer, or even of the generality of them, to pay the prices for prime ſtock; and if they could, the improvement of their meadows and paſtures ſhould go hand in hand with that of their ſtock. Mr. MILLER's idea, which I cannot but approve, and wiſh to ſee in practice, is, that gentlemen of fortune ſhould procure, for the uſe of their tenants, the beſt bulls, rams, ſtallions, &c.

This, if they did not chuſe to do *gratis*, might eaſily be thrown upon a plan to indemnify expences, and would tend very much to facilitate the improvement of the ſtock of the ſmaller farmers.

The great objects in the produce from horned cattle being, firſt, milk; ſecond, beef; the uniting of theſe two products in the greateſt quantity from the leaſt food or produce of land, ſeems the ultimatum of breed. It has often been obſerved, that cows with the beſt diſpoſition to fatten, not only give the leaſt milk, but ſooneſt go off their milking; whilſt a looſe, open, ill-made cow will both give a larger quantity and continue it longer; but is not ſo eaſily fatted, nor without much more time: the uniting of theſe two qualities in the higheſt degree is therefore the true deſideratum of breeding. The cows of this county will generally give from eight to twelve quarts of milk at a meal (and in ſome inſtances more), and two meals *per* day; but this only in the prime ſeaſon of graſs, May and June; they decline afterwards to three fourths, one half, and one fourth of that quantity, and for two or three months are quite dry. Value of a ſtore cow in calf, or with a calf, generally from ſeven to twelve guineas: when fat they will weigh from ſeven ſcore (one hundred and forty pounds) to twelve ſcore (two hundred and forty pounds) the quarter; and are worth in that ſtate, from eight guineas to twenty guineas each; and in ſome few inſtances their weight and value have been much greater.

It is ſaid that five hundred weight of cheeſe *per* ſeaſon will be ſometimes made from a cow, but I believe in general the produce will be nearer half that quantity. Dairies extend from ten, fifteen, and twenty cows to forty, and in a few inſtances to more, even to ſeventy cows.

No great number of oxen are fatted in this county; the few bred therein are generally ſold at the neighbouring fairs, and driven to fat nearer the metropolis.

The above account is meant to apply to the general cow ſtock of the farmers of this county; ſome few inſtances are to be found where the breed has been carried to a much greater perfection, eſpecially in carcaſe. The following inſtances of capital or ſuperior ſtock came under my obſervation.

May 20, 1794, viewed the cow-ſtock of Mr. PRINCEP of Croxhall. His land is moſtly but not wholly in Derbyſhire, and therefore more properly belongs to the Report of that county. I ſhall juſt obſerve, that they are of the long-horned breed, and by long attention have been brought to a very high degree of ſuperiority; large, thick, heavy, and well-made, with a pretty good ſhow for milking, and ſuch a diſpoſition to fatten, that Mr. PRINCEP obſerves, the young ſtock are obliged to be almoſt ſtarved by ſhort paſturage, otherwiſe they run fat and never ſtand the bull: the cows give upon the average about eight quarts of milk each, which the owner thinks equal, from its ſuperior quality, to a much greater quantity from inferior breeds. Mr. PRINCEP's bull named Bright, which always has and will invariably be kept for his own ſtock, is a majeſtic noble animal; large, thick, heavy in the valuable points, with the leaſt imaginable proportion of offal; with a ſkin handling ſoft and ſleek. This majeſtic animal is ſo gentle and docile, that three or four perſons at once may handle him without the leaſt ſign of ferocity or even notice on his part. Bright-Eye, the ſon of Bright, now three years old, is a beautiful and moſt complete animal, and it requires a perſon of ſuperior ſkill to that which I poſſeſs to find a ſingle fault in him.

At Fiſherwick, LORD DONNEGAL's, are alſo ſome very fine large and well-made cows of the long-horned breed, and promiſing well for milking. An ox was fatted here, (of Mr. Princep's breed) and ſlaughtered in the ſpring of the preſent year, 1794, of which the following are particulars:

| | |
|---|---|
| Weight of the four quarters, | 1988 lb. |
| Ditto of tallow, - - - | 200 |
| Ditto of hide, - - - | 177 |

This ox was worth fifty guineas: another, very little inferior, was ſlaughtered for the uſe of his Lordſhip's family the Chriſtmas preceding.

At Blithfield, the ſeat of Lord Bagot, the cow-ſtock, both his Lordſhip's and the ſteward's (Mr. Harvey's), of the long-horned breed, are very ſuperior, having been for many years croſſed from the ſtock of the firſt-rate breeders. The dairy is a great object in this neighbourhood, in which cheeſe is the principal article, though a good deal is done in the feeding way. In his Lordſhip's paſture I obſerved a good many Scotch bullocks, as well as ſome very fine oxen of his own breed.

At Teddeſley Park, Sir Edward Littleton's, the cow-ſtock is very ſuperior; a few of the cows may rank with the beſt in the county: they are long-horned and good milkers, and each has a heavy and well-made carcaſs: here is alſo a yearling bull, beautiful both in make and colour, and of a good ſize, with ſome very good feeding cows and oxen.

Fine large and good cows are to be found in the poſſeſſion of many farmers all over the county. At Mr. Huskison's, at Oxley near Wolverhampton, there have been two recent inſtances of cows bred on the farm and fatted there to upwards of eighteen ſcore the quarter: the laſt, ſlaughtered in the preſent ſpring, Mr. Huskison informed me weighed three hundred and ſeventy-four pounds the quarter. Theſe cows paid the butcher forty guineas each; and there are now many good cows on that farm, and a bullock of the breed of the above cows which promiſes to be very large and heavy.

My neighbour Mr. MILLER of Dunſtall has the largeſt and beſt dairy that I know in the county. The number of his milkers are upwards of ſeventy, moſtly of the long-horned breed; with ſix or eight cows without horns. The main object is cheeſe, of which at leaſt four hundred weight is made per cow. Early in the ſpring he fats calves for the butcher, and they are ſold at eight or ten weeks old at three or four guineas a-piece, and ſometimes for more. The cows, when taken from the dairy, or when accidentally barren, are alſo fatted for the butcher upon the farm, and ſold from ten to twenty, and ſometimes twenty-five pounds each, and ſeldom any are ſold in ſtore order, or in any other way. Mr. MILLER, in his cow management, has two main objects in view, milk and beef; in purſuit of which the carcaſs and the milk-bag are equally attended to; and the cows here are generally of good ſize, good milkers, and well-made, with a diſpoſition to fatten. The dairy too is managed in a firſt-rate ſtyle. Mr. MILLER has a large breadth of land capable of improvement by irrigation, of which he ſeldom fails to make the beſt advantage. This, by furniſhing an abundant ſupply of winter keep, enables him to maintain not only the above number of dairy-cows, but alſo a conſiderable ſtock of young cattle.

The cows of this neighbourhood are of various colours; red, white, black, and party-coloured; but the red, with or without ſtreaks or patches of white, are moſt prevalent; and the cows in general of the county are better or worſe in proportion to the reſources of the farm they live on, for hay and paſturage. Thoſe farmers, perhaps, who have not natural meadows, or ſtreams of water to improve them, do not make cow-ſtock an object of much attention; and indeed, notwithſtanding the plauſibility of the theory, that a well-bred beaſt will do well on the worſt ſoil, it will ſeldom be found, in fact, that good ſtock exiſts any where but where good keeping is found; and that to maintain and improve ſuch ſtock, the improvement of meadows and paſtures muſt be a primary object, and a ſupply of good ſummer and winter proviſion for ſuch ſtock muſt be ſecured before ſucceſs can be expected in improving the breed: and farther, that ſtock and the land on which they feed ſhould have ſome analogy in quality, ſeems in part owing to phyſical as well as natural cauſes; for on a poor ſoil the occupier being, as it were, poverty-ſtricken, will have little of that energy, ſpirit of enterprize, and exertion, which are neceſſary towards inſuring ſucceſs in all attempts towards improvement; the neceſſary expences towards which are only to be born by thoſe in eaſy circumſtances, and which will ſeldom be the caſe with tenants at rack-rent on poor land. The next ſtep towards improving ſtock, after providing for them the beſt keep circumſtances will admit, is certainly by a ſelection of breeding ſtock; but this muſt be done by degrees, for the pecuniary circumſtances of but few will admit of a total change. How much ſoever they may diſapprove of what they have in poſſeſſion, they can only reject a few of the inferior: this, however, is in their power, and by always ſelecting the beſt for breeding and rearing, improvement will in time be effected. Great improvements in cow ſtock are doubtleſs to be made by a proper ſelection of the beſt heifers in carcaſs and milk bag for breeding ſtock, but more particularly by a judicious choice of the bull; a principal mode to improve the ſtock on a farm. As what is called prime or firſt-rate ſtock is in but few hands, and the owners generally aſk higher prices than farmers in general can afford to give, it would certainly be a laudable effort if the owners of eſtates, by themſelves or their ſtewards, would procure firſt-rate male animals for the beſt ſtock only

of

their tenants and neighbourhood, even if ſo much a-head were paid as would indemnify the expence; or if encouragement could be given by any public meaſure, by bounties, &c. &c. under the direction of the Board, for keeping the better ſorts of each in regular diſtricts, it would be a ſalutary plan, and might have a tendency to the improvement of live ſtock; and it is only by ſome ſuch or ſimilar efforts, that the higheſt improvement to which live ſtock is capable of being brought can be accelerated and effected.

SHEEP. The diſtinct native breeds of ſheep of the county of Stafford are as follow:

Firſt, The grey-faced without horns, with fine or cloathing wool. Secondly, The black-faced horned, with fine wool. Thirdly, The white-faced without horns, with long or combing wool. Fourthly, The mixed common or waſte land breeds, Fifthly, The paſture ſheep of different breeds and croſſes.

Firſt, the grey-faced without horns, are the native breed of Cannock Heath, Sutton Coldfield, and the neighbouring commons. The diſtinguiſhing characteriſtics of this breed are, in general, grey faces, lighter or darker, varying from white to black, with all the ſhades of colour between. The legs of the ſame colour with the face. The wool fine, cloſely and compactly covering the carcaſs, without horns, of a moderate ſize. Thoſe from a ſound part of the walk, and from a managing maſter, have a good diſpoſition to fatten, and produce mutton at the table equal to that of any breed in the kingdom. The better breed of theſe ſheep very much reſemble the breed of the South Down, and are, doubtleſs, originally from the ſame common ſtock; and perhaps the ſuperiority of the South Down to ſome of the beſt Cannock Heath and Sutton Coldfield flocks is very queſtionable, and cannot readily be admitted. The general fault of this breed has been the want of thickneſs in proportion to their length. Sir Edward Littleton, with a patriotiſm and public ſpirit highly commendable, has for ſeveral years back been ſetting the example of improving this breed, by croſſing with Roſs rams; by which the carcaſs has not only been thickened, improved in form, and increaſed in weight, but the wool improved in a very high degree, ſo much that his wool of 1792 was ſold (as I was aſſured by Mr. HALL the ſteward) at twenty-four ſhillings the ſtone of fourteen pound; that of 1793, and of the preſent year, 1794, remaining unſold. They are now, June 9, waſhing the ſheep in preparation for this year's ſhearing, and ſome of the neighbouring flocks are ſheared.

Mr. HALL believes he could ſell the two years wool at twenty-one ſhillings the ſtone, which is eighteen pence per pound, though fourteen per cent leſs than the laſt price. Sir EDWARD's flock conſiſts of ſeveral hundreds of ſheep: the ewes fatten from twelve to ſixteen pound the quarter, and the wethers from ſixteen to twenty pound. Many of Sir EDWARD's tenants have pretty cloſely followed his example, and much improved their flocks by a careful ſelection of rams. The number of ſheep kept on this ſide Cannock Heath is very conſiderable; the common being now in many places perfectly whitened with them. It is to be remarked, that this ſide of the common is amongſt the beſt of the whole walk of twenty-five thouſand acres. The ſoil ſound, and of a pretty good ſtaple the herbage tolerably good in the open ſpaces; and leſs encumbered with heath and rubbiſh than moſt other parts of this waſte. Reſpecting diſpoſition to fatten, there is no reaſon to believe the ſheep here inferior to any other breed; the ewes and lambs are often taken into paſture early in the ſpring, when, if ſound ſheep, every lamb will go to the butcher, and every ſheep follow in the courſe of the ſummer. A few years back I bought a lot of ewes and lambs at Cannock fair, unſhorn, May 8, at nineteen ſhillings per couple, every lamb of which was ſold to the butcher before Midſummer at from twelve to fourteen ſhillings; and the ewes might have followed about Michaelmas, but, for the ſake of advance in mutton, were kept in turneps till January following, and ſold at a guinea each, which is a profit not more than common. Theſe ſheep, which, kept in paſtures and croſſed with ſtrong rams, make the paſture ſheep ſtock of many farmers in this county, are very ſtrong ſheep, and are preferred by their owners to the Leiceſter breed; but I think the improved Leiceſter breed much ſuperior, and that they ſhould have the preference from all ſuch farmers as have no common right; but the native breed croſſed, thickened, and improved by degrees, will probably be much ſuperior, and better adapted to the walk than any thing that could be effected by a total change of breed: and that the native breed is capable of being improved, is already demonſtrated by the ſucceſsful attempts here of Sir Edward Littleton, of ſome of his tenants and neighbours, and on Sutton Coldfield by thoſe of Mr. Fowler and others. If any gentleman who is a ſtranger to this country ſhould wiſh to have an idea by ocular examination of the ſheep of theſe commons, he ſhould by no means truſt to a chance ride upon the waſtes, where perhaps he may meet only with the breed of the laſt century, the property of ſlovens who never gave themſelves the trouble of a moment's conſideration about improving their flock, but ſhould enquire for ſome reſpectable ſheep-maſter. It is farther to be obſerved, that much the beſt ſheep land on this great common is on the weſt ſide towards Teddeſley, and on the north towards Rudgeley and Beaudeſert, in which the neighbourhood of Hedgford muſt alſo be included large tracts of the ſouth and eaſt parts; being cold, barren and wet, in want of draining, and covered with little but heath, whortleberries, lichens, and moſſes.

The Sutton Coldfield ſheep are doubtleſs from the ſame original common ſtock with thoſe of Cannock Heath, but have been puſhed to a larger ſize and weight. Mr. FOWLER of Erdington, who, though in Warwickſhire, is very near the borders of this county, and ſummers ſeveral hundreds on the Coldfield in either county promiſcuouſly, was ſo kind as to ſhew me his own and his neighbours flocks. His rams are ſtout, broad-backed, wide on the rump, and well-made, with fine wool to the very breech: the largeſt of them would, I believe, fatten to more than thirty pounds the quarter, and the ſmalleſt would be conſiderably more than twenty. Great attention has been paid for ſeveral years paſt to improving this breed both in wool and carcaſs, and the principal farmers have endeavoured to excel each other in theſe particulars.

Mr. FOWLER thinks the breed is now puſhed rather too far in bulk and weight for the paſturage of the common, or even of the neighbourhood, unleſs they are driven into better land for fatting. The following particulars he gives me.

" In general the ewes will weigh, when fat, from fourteen to eighteen pound the quarter, and the wethers from fifteen to twenty and ſometimes much more. About two years ſince I had a true Coldfield-bred wether ſheep which weighed thirty-two pound per quarter. About eleven years ſince I turned, as uſual, about the firſt week in May, my ewes and lambs to the common: in Auguſt I took the lambs from the ewes, and kept them in the incloſures about fourteen days; afterwards I turned forty of my wether lambs to the common again, and kept them there winter and ſummer, without ever putting them to any other keep, ſome of which I ſold with other Coldfield ſheep at nine years old for forty-ſeven ſhillings each: their chief ſupport in winter was on heath or ling.

" The average price of wool for the laſt ſeven years, which I have ſold, is thirty-three ſhillings and eightpence per todd.

todd of thirty pounds, and I think the average weight per fleece is three pounds each.

"I think about 11,000 ſheep are kept in ſummer on that part of Sutton Coldfield which is in Staffordſhire, and which contains about ſix thouſand five hundred acres. Many more might be kept if the rabbits, now in abundance upon about one thouſand five hundred acres of this common, were deſtroyed. RICHARD FOWLER."

Mr. FOWLER is clearly of opinion, that puſhing or increaſing the ſize or bulk of ſheep, by improving their paſturage, or removing them to a better paſture, does not at all tend to injure the ſtaple, or degenerate the fineneſs of cloathing wool, provided due attention be paid to ſelecting the fineſt-woolled rams.

I have farther to obſerve, that Sutton Coldfield is but a barren ſheep-walk; containing in ſome large tracts ſcarcely any other plant than heath; in other places, fern, gorſe, whortleberries, and ruſhes, with graſſes in ſmall proportion.

Secondly, The black-faced horned ſheep, with fine wool, are peculiar to the commons on the weſt of the county towards Drayton in Shropſhire, particularly Maer Heath, Aſhley Common, and the other waſtes in that neighbourhood. They have black and rather long legs; are light in the carcaſs: the rams are horned, and have been bred, I apprehend, with little attention, and are certainly capable of great improvement, eſpecially in the thickneſs and form of the carcaſs. I think them in their preſent ſtate much inferior to the grey-faced polled laſt deſcribed; their walk, with the herbage thereon, is, however, poor, and ranks with the worſt parts of the commons before mentioned.

Thirdly, The white-faced polled, with long or combing wool, conſidered as occupying waſte or unimproved land, are peculiar to the eaſt parts of the Moorlands. Upon the calcareous or lime-ſtone bottom they are ſtrong heavy ſheep; and I think the moſt valuable and beſt ſheep on waſte land in the county: inferior to the new Leiceſter, as being much heavier in the bone, and coarſer in make; but, by proper croſſing with well-made rams, may be improved into an excellent breed of ſheep.

Fourthly, The mixed common or waſte-land breed conſiſts of the ſheep upon the waſtes, or upon the uncultivated incloſures, in the weſt part of the Moorlands, and on the grit or gravel bottom. Theſe are much inferior to thoſe on the lime-ſtone or calcareous ground, and are indeed of a very different breed. Theſe appear to have originated from the ancient breed of the Moorlands, continued without attention, and have ſome white, and ſome grey or dark faces, with legs generally the ſame colour: ſome with and ſome without horns: the wool too coarſe to be called cloathing, and too ſhort for combing wool. The walk on this weſt part is inferior to the other, as being in part compoſed of peat moors, on which ſheep are, doubtleſs, ſubject to rot. The breed is nevertheleſs capable of being much improved by attention in ſelecting rams, which appears to have been in a great meaſure neglected.

In the mixed breed, too, may be included the ſheep upon the walks and commons in the ſouth of the county; as on Clent hills, the commons near Stourton, Swindon, and Wombourn, Kinver Edge, &c. the ſheep on which are a mixed breed, not deſerving commendation; apparently bred with little attention; with faces of all colours, white, grey, and black; ſome with, and ſome without horns: the wool is tolerably fine, and of the cloathing ſort. Some of the rams have large horns, as heavy as their heads; and even the young lambs often have a ſtrong horn growing with great luxuriance. This propenſity to large heavy horns ought, I think, to be condemned. A heavy horn, doubtleſs, requires nouriſhment from food, as well as the carcaſs, and when full grown is of no value. If ſheep are to be bred with horns, the horns ſhould be fine and ſlender; and rams with ſuch only ſelected. But I muſt confeſs myſelf partial to ſheep without horns: for I conceive a ſheep's horns to be of no ſervice whatſoever, even for defence; and ſo far from ornamental, that the animal appears handſomer without them.

Fifthly, Amongſt the paſture flocks of different breeds and croſſes, in regular flocks, or as ſtock yearly changed, I firſt name the Leiceſterſhire breed; of which there are many regular flocks in different parts of the county. They may be divided into two ſorts; the old and new Leiceſter breeds. The old Leiceſters are well known, as large thick heavy ſheep, with long combing wool: the new Leiceſter breed is a refinement upon the old by croſſing with a finer-boned and finer-wooled ram. Theſe are now eſtabliſhed in various parts of the county, and increaſing in other places. The old Leiceſter breeds are croſſing with the new, which bids fair to produce a very reſpectable breed; there being many inſtances in which the old breed were become too coarſe, and the new too fine. Amongſt the Leiceſter flocks that I have ſeen or examined in this county, I ſhall notice the following, rather in the order in which I have ſeen them, than from any other reaſon. Mr. PRINCEP's flock, which I ſaw in the field, and alſo under the hands of the ſhearer, are of the new Leiceſter breed, and very reſpectable. Some other flocks belonging to LORD BAGOT's tenants, I ſaw and examined, particularly ſome belonging to Mr. HARVEY, his Lordſhip's ſteward. This breed, introduced into this neighbourhood a few years back, is gaining ground faſt, and is ſuppoſed by many, with whom I am diſpoſed to concur, to be the beſt paſture ſheep ſtock in the kingdom. This ſuperiority conſiſts, or is ſuppoſed to conſiſt in this: that the paſtures may be ſtocked much harder with theſe than with any other ſtock of equal weight; as they are always fat, even when ſuckling lambs. Some very good rams of this breed, worth from five to ten guineas, either to purchaſe or hire, are on Lord Bagot's eſtate, and in the neighbourhood, particularly in the hands of Mr. Harvey and his brother. The ewes full grown will weigh from twenty to twenty-five pounds per quarter. Wethers at two years old, at which age they generally go off, about the ſame; but when kept another year, they will riſe to thirty pounds per quarter. The fleeces weigh from ſeven to ten pounds: the price of wool for the two laſt years has fallen from one ſhilling to eightpence per pound; the preſent price does not exceed eightpence. I have obſerved this year, that the lambs from a ram of this breed were lambed much eaſier than many others, particularly than thoſe from a ram of the old Leiceſter breed the preceding year. This fact is well known to every one acquainted with my flock: the lambs of 1793 were very generally obliged to be drawn away by force from the ewes. The lambs of 1794 from the ſame ewes were produced as generally without any aſſiſtance: the ewes were in equal condition in 1794 as in 1793. I attribute this chiefly, or wholly, to the form, as the ram is finer in the neck and ſhoulders than a coarſe-made ſheep.

Theſe ſheep, as well as I can deſcribe them in words, are fine and light in the bone; thick and plump in the carcaſs; broad acroſs the loin, with the back bone not riſing into a ridge, but ſinking in a nick, and as it were a double chine of mutton riſing on either ſide; fine and clean in the neck and ſhoulder; not too ſhort in the leg; and of a ſufficient bulk in the carcaſs to riſe to the weight above mentioned; which bulk in this breed will be apparently leſs than in any other.

Many other croſſes of ſheep of conſiderable merit are to be found in the paſtures of different farmers; and perhaps the great ſuperiority of this or of any breed over all others, has been over-rated by thoſe who have made the compariſon. The difference in natural ability and attention of different ſheep-maſters cannot be ſuppoſed ſo great as to influence the reſult of their endeavours, in a manner ſo very ſuperior. Accidental cauſes may have firſt raiſed the attention of thoſe who by aſſiduity have ſince contrived to keep the lead. But others will cloſely preſs upon them: and as the different breeds of ſheep are but different varieties of the ſame ſpecies, to record the idea that any one individual has carried his breed of ſheep to a pitch of excellence ſo much ſuperior to all others, is a libel upon all other ſheep-maſters. This idea ſtrikes me more forcibly, ſince, taking an extenſive yet particular view of the ſheep of this county, I have found diſtinct breeds, each having its peculiar merit; ſo that it is not very eaſy to decide the ſuperiority. He who begins with a reſpectable breed has, doubtleſs, an advantage; but I believe no breed is yet arrived at its *ne plus ultra* of perfection, but remains to be improved upon by future attention. Mr. BRADBURNE's remark pleaſes me much, when he ſays, "great advantages "would reſult from an increaſe and improvement in the "breed of ſheep," becauſe his own are now of the moſt reſpectable Leiceſter kind; yet he thinks them capable of great improvement. My neighbour Mr. CORSER, of Buſhbury-hall, has raiſed a new breed, by ingrafting the Wiltſhire length upon the Cotteſwold thickneſs, and has ſince removed the Wiltſhire horn by croſſing with a well-bred ram without horns; the production from which is a beautiful well-made ſheep, free from horns, and of conſiderable weight; and which would, I think, be made equal to any breed I have ſeen, by giving them another croſs from a thick well-made ram without horns. The Cotteſwold or Glouceſterſhire are kept by ſome, and much admired in this country. The Wiltſhires, croſſed by a heavy ram, have produced ſheep at little more than two years old of forty pounds per quarter, and which have been ſold to the butcher at three pounds ten ſhillings each. The Dorſets have often anſwered well here, and are in the opinion of ſome experienced farmers equal to any other breed; and the fact is, that any breed of ſheep, if ſound and healthy, may be enlarged and improved by good keeping, and by croſſing with rams ſelected with due attention.

In this populous manufacturing country the conſiderable demand for lamb, as well as mutton, has induced a great proportion of farmers to keep none other than an annual ſtock of ſheep, conſiſting of ewes bought in at Michaelmas, from Cannock Heath, Sutton Coldfield, the commons of Shropſhire, and ſometimes even from Glouceſterſhire, Wiltſhire, and Dorſetſhire. Theſe ewes are immediately put to a ram, and the lambs in ſpring ſuckled till they are fit for the butcher; they are then ſold, and the ewes kept in good paſture, fatted, and ſold after them, and the whole flock generally cleared off within the year. And many people think the profits in this are equal to thoſe in any other way: the lamb and wool will generally pay the original purchaſe of the ewe, and ſometimes more; and the price of the fat ewe remains for keeping and profit.

The diſorders to which ſheep are moſt ſubject in this county are, the rot, the ſcab, the foot-rot, and ſtriking or dying in the blood. Reſpecting the rot, it is generally ſuppoſed to be occaſioned by feeding on wet lands. We have had propoſals by advertiſement in the public papers for curing this diſorder; but I cannot find by any well-authenticated account, that any ſpecific for the cure has yet eſtabliſhed its character upon the baſis of experiment. The few opinions which I have received reſpecting the cauſe and cure of the rot are as follow.

The Rev. Mr. WRIGHT tells me, " that the rot is ſuppoſed " to be occaſioned by the wetneſs of the ſeaſon, more than " by the nature of the ſoil on which the ſheep are depaſtured."

Mr. WEBB ſays, that " ſheep are moſt ſubject to rot on " low flat grounds affected by land floods. But poſſibly the " rot may be occaſioned by the licking-up of ſome inſect or " egg that is frequent on low wet lands; yet I have known " ſheep kept upon wet meadows that are ſubject to floods, " without injury."

He knows of no means uſed to prevent the rot in ſheep, except draining the land.

Mr. BRADBURNE's account ſtates, that " common fields " and waſte lands, from the diverſity of ſituation, heavy rains " flowing from the ploughed to the low damp parts that " are not tilled, groſs vapours that exhale from damp " lands, are amongſt the cauſes of the rot. Old ſward, where " the ſurface water remains long on the land, is moſt fatal to " ſheep."

He has been ſucceſsful upon lands ſubject to rot ſheep, by a plentiful uſe of lime, and in laying the land in a form for the rain water to paſs off quick.

Mr. MILLER's opinion is, that " the lands moſt liable to " rot ſheep are wet and low lands, and looſe, where ſheep " pull up the graſs by the roots, and are obliged to eat the " dirt with it. But ſheep rotted in the winter of 1793 up- " on moſt ſorts of lands, owing to conſtant wet, which pro- " duced more worm-caſtings than uſual, and occaſioned the " graſs to be always dirty by over-trampling it."

" The only remedy is underdraining, to make the land " ſound and dry."

Mr. Bache, who has had much experience on the ſubject, thinks the rot in ſheep is owing to " wet ſeaſons, and " to a putrid or unkindly ſtate of the air and herbage on wet " lands in ſuch ſeaſons. He mentions a ſoft ſpungy graſs " which he conceives has a tendency to produce the rot, and " which graſs I underſtand to be of the *carex* or ſeg-graſs " tribe, and which indeed grows moſtly on wet lands; and adviſes that in wet unkindly ſeaſons ſheep ſhould be removed " to dry lands."

The ſcab is a very troubleſome diſorder, and when got to any conſiderable height requires a good deal of pains and attention to cure. It may be effected by perſeverance in applying decoctions of tobacco, turpentine, ſulphur and verdigreaſe, or by mercurials.

The foot-rot is cured by cauſtics, as quick-lime or butter of antimony, applied to the part affected.

The ſtriking or dying in the blood is a very ſerious complaint, and generally happens to ſheep in a growing or fatting ſtate, often in turnips in winter, or in clover in the ſpring ſeaſon, and is I ſuppoſe of the apoplexy kind. I have heard of no remedy or preventative, and the only precaution uſed here that I know of, is to look them over often, and kill them inſtantly when found ſeized with the complaint. But it often happens that they are dead, and the blood ſtagnant, before they are found; in which caſe the carcaſs is loſt. If any ſheep-maſter is acquainted with a preventative, the communication thereof would be a valuable ſervice to the community. Bleeding has been recommended, but, not having been found effectual, is, I believe, but little practiſed.

Horses. The draught breed of horſes being thoſe only whoſe uſe is applicable to agriculture, of the others I ſhall ſay nothing, and of theſe but little, as conceiving there is nothing very remarkable in our breed; though we have a ſufficiency of good ſtout horſes for the uſe both of the carrier and the farmer. The colour is moſt generally black or brown, each being equally eſteemed, and equally uſeful; and indeed, as the old proverb ſays, " a good horſe is never of a " bad colour." Some reſpectable ſtallions are kept of each colour: but in reſpect to the breed of horſes, I think this county muſt yield the palm to the neighbouring ones of Leiceſter and Derby; and indeed breeding horſes is by no means a main object here, and carried little farther than to ſupply the county, and alſo the neighbouring fairs with a few. There are ſome conſiderable ſhows or fairs, where a great number of excellent colts and horſes are offered to ſale, particularly at Stafford and Burton.

HOGS. The breed of hogs moſt eſteemed here, are not the large ſlouch-eared breed, but a croſs between them and a ſmaller dwarf breed. They ſhould be fine in the bone, thick and plump in the carcaſs, with a fine thin hide, and of a moderate ſize; large enough to fat, at from one to two years old, to the weight of from three hundred to four hundred pounds each. Theſe, if well bred, will keep themſelves in good plight with little feeding, and will ſoon grow fat with a plentiful allowance of proper food. Hogs of the large breed have been fatted here to from ſix hundred to eight hundred pounds weight, excluſive of the entrails; but, requiring much time and food, have pretty generally given way to a ſmaller-ſized, finer-boned, thick, plump animal. Hogs are generally fatted here by farmers with the refuſe of the dairy, boiled potatoes and barley meal, and peaſe either whole or ground: by millers with what they call ſharps and gurgeons, that is, with the huſk or bran of wheat ground down, but not wholly diveſted of its flour; alſo with other ſorts of grain and pulſe ground down : by butchers, with the refuſe or offal of ſlaughtered animals. Bacon and pork are much eaten in this neighbourhood, and the conſumption is very conſiderable, but ſupplied in part from Shropſhire and North Wales.

DUNGHILLS AND COMPOST. Moſt farmers turn over their farm-yard dung, and draw the detached parts of their ſtraw, dung, rick-yard and barn-door rubbiſh, into a heap in the fields near where it may be wanted, that it may heat and ferment to a proper ſtate for laying on the land. Very few alſo but pay attention to mixing together ſoil and town dung; or lime, mud, ditch ſcourings, &c. as compoſts for dreſſing paſture land, or as an addition to the dunghill upon the arable. Town dung and lime are fetched by moſt people who are within reach of thoſe manures. All the ſoot ſwept from chimnies is uſed; " and bone filings from the " bruſhmakers is a very valuable manure." In ſhort, all the manure made in town and country is laid upon the land.

## OPEN FIELDS AND INCLOSURES.

THE moſt conſiderable proportion of the cultivated land of this county is incloſed, very little remaining in common fields. I can only recollect the following common fields: 1. Stafford; 2. Stone; 3. Chedleton; and, 4. Bloxwich; the whole amounting to perhaps little more than one thouſand acres. I reckon in all caſes that common-field land is improved at leaſt five ſhillings per acre per annum by incloſure, which will pay a

good

good intereſt upon the expence of incloſing; alſo that its produce will be conſiderably greater; for common fields are generally both imperfectly cultivated and exhauſted by hard tillage. Incloſures only can effect the improvement of ſtock. Reſpecting population, I have no doubt but the means of employment are increaſed by incloſure, by the planting and reparation of fences. To prove the ſuperiority of incloſures, let us put the caſe of a propoſal made to throw a well-fenced incloſed country into common fields, and I believe every mind would revolt at the idea. The ſize of incloſures is various, and of all dimenſions, from ſmaller to twenty or thirty acres, and ſhould always be proportioned to the ſize of the farm. I believe the ſuperiority of incloſures to common fields is univerſally admitted, and know not of any argument that can be brought to prove the contrary.

## WASTE AND UNIMPROVED LANDS.

THE waſte and unimproved lands of this county are very conſiderable, and certainly in the preſent ſtate of population their cultivation and improvement is very much a national object. The moſt extenſive waſtes or uncultivated ſpots in the county are, Needwood Foreſt, Cannock Heath, and Sutton Coldfield; beſides a great number of commons of leſs extent, and ſome conſiderable tracts in the Moorlands and elſewhere, appropriated and incloſed, but not improved.

Needwood Foreſt is a moſt intereſting ſpot. Here near ten thouſand acres of one of the fineſt ſoils of the kingdom lay in a ſtate of nature, wild and romantic! beautiful in the eye of the fox-hunter and the ſportſman. But, conſidering the ſtate of population and conſumption of landed produce, its continuance in its preſent ſtate is certainly indefenſible upon any ſound principles of general policy. Here the warblers of the wood chaunt forth their mellifluent notes, and the herds of deer range at will over the plain, or through the thicket. The fox and the badger burrow on the declivity of the deep glen, the rabbit on the ſandy hill, and the hare hides itſelf in the thicket. The woodcock, the ſnipe, the pheaſant and the partridge abound in profuſion; but all often diſturbed by their tyrant maſter Man. The natural diſpoſition of this extenſive foreſt comprehends a great and beautiful variety of aſpect. Gradual eminences and eaſy vales, and with meandering rills, and now and then a bolder and more abrupt ſwell, form the general feature of the Foreſt: a fit ſubject for any degree of improvement by human art and induſtry. In the northern part, particularly within Marchington Woodlands, the aſpect is bolder. Here the Foreſt is compoſed of deep glens, ſurrounded by abrupt precipices; impracticable to the plough, but happily well cloathed with wood, amongſt which the ſtout native oak, young, luxuriant, and of vigorous growth, is in great abundance. On a level with the ſummit of theſe precipices is a broad upland ſurface, capable of being converted to corn or paſture land of a firſt-rate quality.

The ſwells or hills of this Foreſt are very generally compoſed of immenſe beds of red or white marl, the colour ſometimes changing ſuddenly, ſo that in a ſmall diſtance they are as diſtinct as can be conceived. This marl, of a friable mouldering texture, continues from the very ſurface to many yards in depth. In ſome of the incloſed land adjoining, particularly Agardley Park farm, it is the ſame, and both colours have been uſed promiſcuouſly for marling land, with equal good effect; and very probably the white may contain the greater portion of calcareous earth. The white loamy ſurface is alſo equally productive of corn or paſture with the red, and equally eſteemed by the farmer. This white marl I had never obſerved before.

This Foreſt is ſtocked with deer, horned cattle, and horſes; but no ſheep are ſuffered to feed on it. The ſuppoſed flock may be about three thouſand deer, and three thouſand of all the other kinds in ſummer, but much fewer in winter. The keeping of the three thouſand horſes and horned cattle, charged at twelve ſhillings per head for the ſummering, amounts to eighteen hundred pounds, or about four ſhillings per acre, upon the whole extent of the Foreſt; and this ſum of four ſhillings per acre is all the advantage that a neighbouring very intelligent farmer ſuppoſes the Public derive from this tract; the deer not being managed in any ſyſtem for the public advantage, or for the ſupply of ſubſiſtence and employment for the bulk of mankind. I ſhall add for them to the above account one ſhilling per acre, and five ſhillings per acre as the total value of the Foreſt to the Public in its preſent ſtate. I eſtimate the capital employed in ſtocking the foreſt at five ſhillings per head upon three thouſand in number, or fifteen thouſand pounds. Although theſe, not being conſtantly kept there, cannot wholly be called Foreſt ſtock, yet I will ſuppoſe that which ought to be taken off on this account to be made good by advantages ariſing from the deer. The amount of capital employed in ſtocking the Foreſt will then amount to fifteen thouſand pounds, or about one pound twelve ſhillings and ſixpence per acre, and its value to the Public in its preſent ſtate as land about two thouſand three hundred pounds per annum.

The extent of the Foreſt, by an ancient ſurvey alluded to by the Commiſſioners of Crown Lands in their laſt examination of it, is nine thouſand two hundred and twenty acres: of this, in caſe of incloſure, I will ſuppoſe one thouſand acres ought to be reſerved for woodland. This may be done about the glens and impracticable ſpots, and in other places where thriving oaks are the moſt promiſing: there they ought to be fenced off, and reſerved in clumps and coppices, which would be both an ornament to the country, and a nurſery for ſtout oak timber. Two hundred and twenty acres I will ſuppoſe occupied by the lodges, and other ſmall incloſures. This is already in an improved ſtate; eight thouſand acres will then remain for improvement. The moment that theſe ſhall have been incloſed, and buildings for occupation erected on them, they will be worth for a term, as many guineas per annum, and would be improved to a higher value. The amount of capital employed in ſuch improvement in buildings, incloſure, crops, ſtock, &c. might on this rich land be twenty pounds per acre. Deduct the preſent capital, one pound twelve ſhillings and ſixpence per acre, remains increaſe eighteen pounds ſeven ſhillings and ſixpence per acre; which, upon eight thouſand acres, adds one hundred and forty-ſeven thouſand pounds to the national capital. By improving this tract, the increaſed annual product would probably be five pounds per acre, or forty thouſand pounds per annum.

The nature of the ſoil of this tract is in general a red or white marly loam, more or leſs tenacious; but ſeldom approaching to the harſhneſs of clay. Many conſiderable ſpots are light enough for turnips. I eſtimate one thouſand acres in the eight thouſand to be of this quality: this, in caſe of a diviſion or incloſure, ſhould be thrown into allotments, and divided in equal proportion, of ſo much to every hundred acres, and laid with the ſtrong land, which would enable every occupier to provide himſelf with a portion of turnips, for winter food for his ſheep; in compariſon of which convenience, a trifling inconvenience in point of diſtance would be no object. The land would afterwards be ſown with barley.

In every incloſure the rills and vales ſhould alſo be particularly attended to, and the boundary of ſuch vales traced out by a ſpirit-level, ſtretching in breadth as they proceed downwards; and the ditches ſeparating them from the upland being upon a level, ſhould be conſtructed to anſwer the purpoſe of floating gutters for irrigation; and where large quantities of flood water uſually paſs off, reſervoirs ſhould be conſtructed to collect and retain ſuch water for irrigation at pleaſure, by which means large tracts of the ſloping ſides of vales may be converted into water meadows: the quantity of ſuch upon this foreſt is not very conſiderable, the vales being generally narrow, and the ſlopes abrupt; it is, however, ſufficient to be an object deſerving particular attention.

This Foreſt, in an improved ſtate, might be rendered one of the moſt delightful ſpots in the kingdom, its form and aſpect comprehending ſuch a great and beautiful variety; and the ſtaple of its ſoil being equal to the production of the fulleſt crops of the moſt valuable grain, or to the fatting of ſtock of a firſt-rate quality. The ſportſman could have little reaſon to complain if his liberal allowance of a thouſand acres, as here propoſed, ſhould be ſuffered to remain in woodland, and this in the wildeſt and moſt romantic part, where the natural aſpect tends to the protection of the favourite objects of his amuſement.

The principal natural vegetable productions that I had an opportunity of noticing, as in ſome degree rather peculiar to the Foreſt, are the following:

1. The ſtout native oak (*quercus robur*); in conſiderable quantity, and promiſing and good in quality. An oak called Swilker Lawn Oak, on this Foreſt, contains at leaſt a thouſand feet of timber: it is of great antiquity, but ſtill fruitful in acorns.

2. Holly (*ilex aquifolium*); in great abundance, has been nurſed up and encouraged in growth, I ſuppoſe, as winter provender for the deer.

A very ſmall proportion of the other ſpecies of wood, though the Foreſt is not without ſome of the common underwoods.

Graſſes.—3. Vernal graſs (*anthoxanthum odoratum*); very common all over the Foreſt.

4. Annual meadow-graſs (*poa annua*); chiefly near road-ſides: none of the other finer graſſes being yet in the ear (it being only May 21), they could not with certainty be diſcriminated.

5. Seg-graſſes (*carex's*); ſeveral ſorts in moiſt ſpots, and indeed all over the Foreſt, would be weakened and give way to better herbage, when any attention ſhall have been paid to diſcharge the ſtagnant water.

6. Louſe-wort, or red rattle (*pedicularis ſylvatica*); a bad paſture plant, but encouraged or weakened by the ſame cauſes with the laſt: I obſerved ſome with white flowers.

7. Gorſe (*ulex Europæus*); in patches all over the Foreſt.

8. Petty whin, or hen gorſe (*geniſta Anglica*); in various places.

9. Common fern (*pteris aquilina*); on dry banks.

10. Branched polypody (*polypodium dryopteris*); common on the Foreſt.

11. Wood ſpurge (*euphorbium amygdaloides*); very common on moſt parts of the foreſt, has a ſingular appearance: I have ſeen this plant no where elſe wild in Staffordſhire.

12. Hound's tongue (*cynogloſſum officinale*); very common; has rather a beautiful flower; worthy a place in ſhrubberies or flower borders.

13. Spurge laurel (*daphne laureola*); common, and ſome ſpecimens of it variegated.

14. Spurge olive (*daphne mezereum*); leſs common than the laſt.

15. Bilberry (*vaccinium myrtillus*); in moiſt places.

16. Ramſons (*allium urſinum*); near Marchington Woodlands.

17. Woodroffe (*aſperula odorata*); growing intermixed with the laſt.

18. Black briony, or lady's ſeal (*tamus communis*).

The above are the moſt common, ſingular, or peculiar in ſome meaſure to the Foreſt, beſides many others in common with other places.

Cannock Heath is the moſt extenſive waſte in the county, but its extent cannot eaſily be determined with accuracy; I eſtimate it at about forty ſquare miles, or upwards of twenty-five thouſand acres. Large tracts of land on the north and weſt parts of this waſte conſiſt of a good light ſoil, adapted to the turnip and barley culture: the eaſt and ſouth parts are a colder gravelly ſoil, in many places covered with heath to a large extent; yet I have no doubt but the whole may be brought into cultivation; and that ſome of our incloſed land now under cultivation is not at all of a ſuperior quality to this waſte.

Sutton Coldfield is alſo a very extenſive waſte, of no other uſe but as a ſheep-walk or rabbit-warren: that part of it in Staffordſhire contains, according to an eſtimate by a very intelligent reſident near the ſpot, about ſix thouſand five hundred acres; and he ſuppoſes the additional waſte land between Lichfield and Birmingham, including Bromwich-Heath, Aldridge-Common, Walſall-Wood, Whittington-Heath, and Weeford-Hills, will raiſe the amount of Sutton

Coldfield to ten thouſand acres: their value in their preſent ſtate amounts, by his information, to three ſhillings and ſixpence per acre; and if incloſed would riſe to ten ſhillings and ſixpence per acre for the firſt twenty-one years, and afterwards be greater. The other principal waſtes in the county are thoſe of Swindon, Wombourn, and near Stewponey, in the ſouth; Morredge, Wetley-Moor, Stanton-Moor, Hollington-Heath, Caverſwall-Common, in the north. In other parts of the county we find Calf-Heath, Eſſington-Wood, Snead-Common, Wyrley and Pelſall Commons; Tirley, Aſhley, and Maer Heaths; Swinnerton, Tittenſor, and Shelton Heaths; Houlton, Milwich, Hardwick, and Fradſwell Commons, and many others; and upon a retroſpect of the whole, I cannot put our practicable waſte lands, or ſuch as are capable of being brought into cultivation, at leſs than one hundred thouſand acres. Their preſent value as ſheep-walks amounts to three ſhillings per acre per annum: their value incloſed, and after one round of cultivation (tithe-free) will amount to fifteen ſhillings per acre, and improve by incloſure and cultivation, twelve ſhillings per acre, or ſixty thouſand pounds per annum. The preſent capital or value of ſtock belonging to ſuch land may be eſtimated at ten ſhillings per acre, or fifty thouſand pounds; the capital of the land, when incloſed and cultivated, including buildings, fences, crops, live ſtock, implements, and furniture, would amount to fifteen pounds per acre, or one million five hundred thouſand pounds. The addition to the national capital, by ſuch general incloſure and improvement in this county, would amount to one million four hundred and fifty thouſand pounds. This land alſo would make many farms, which, with a due proportion of labourers' tenements, would employ a population of twenty thouſand perſons, children and families included, in cultivation and other occupations connected and dependent thereupon; would furniſh food for double that number, and would maintain alſo at leaſt double the preſent number of ſheep; if ſheep ſtock ſhould become the chief object, independent of other ſtock, which at preſent draw no nouriſhment or ſubſiſtence from this tract. Thoſe farms alſo would produce a proportion of corn: the wool alſo of the ſheep might be increaſed in weight and improved in quality by a due attention to rams and breeding ſtock. A general incloſure and improvement by cultivation of all the waſtes of the kingdom would, by greatly increaſing the national capital, have a proportionable effect upon the revenue; and it is aſtoniſhing that the colonization of diſtant countries ſhould have been ſo much encouraged, while the cultivation of our own country remains ſo far from being finiſhed or perfected.

In all incloſures the impracticable ſpots, thoſe too uneven for the plough, ſhould be reſerved for other uſes, for plantations where the ſoil is at all adapted for that purpoſe, or for rabbit warren upon ſandy bottoms: I have often obſerved plantations ſucceed extremely well on the ſides of precipices.

Paring and burning has been but little practiſed in this county, and opinions vary much as to its propriety. I have often obſerved it practiſed in other counties, but other means are uſed here even for reclaiming waſte lands. Many people have an idea that it is injurious to thin ſoils; and perhaps deep ſoils can beſt bear the operation. Burning of couch graſs is practiſed by ſome; but moſt people think even *that* is better deſtroyed by tillage and ſunſhine upon the land, if the ſeaſon will admit it.

# ARABLE LAND, CROPPING, AND CULTIVATION.

THE arable ſoils of this county, conſidered as referring to cultivation, may be divided into, firſt, the ſtiff or ſtrong clay, marl, or loam; ſecondly, the looſe or light gravel or ſand; thirdly, the mixed or compound ſoil or loam, compoſed of various textures and matter in different places, inclining to ſand, gravel, or clay; in which may alſo be included the thin black ſoils and the calcareous ſoils, or thoſe on a lime-ſtone bottom.

The grain, pulſe, roots, and other vegetables cultivated in field culture upon the arable lands of this county, are chiefly the following:

1. Wheat. 2. Rye. 3. Barley. 4. Oats. 5. Beans. 6. Peaſe. 7. Vetches. 8. Buckwheat. 9. Hemp. 10. Flax. 11. Turneps. 12. Potatoes. 13. Cabbages. 14. Rape. To theſe may be added clovers, trefoils, and one or two of the graſſes. Turnep cabbage has been tried, as well as fainfoin, lucern, and burnet. Carrots and other garden plants are not introduced into field cultivation, except by gardeners for the markets.

Reſpecting a ſyſtem of cropping and round of crops, no general one can be laid down that will apply in all caſes: various accidents and circumſtances will render deviations neceſſary and proper, and the induſtry and ſkill of the attentive farmer will riſe ſuperior to ſyſtematic rules; yet as every regular buſineſs to be well managed, muſt be conducted by ſomething like ſyſtem, the following courſes of crops are given as the general practice of this county.

The ſtiff or ſtrong ſoils are of two ſorts; the ſtrong and harſh inclining to clay, and the more mild or friable marl

or

or loam. Theſe ſoils are generally on a marl bottom, often afterwards rock. On the ſtrong harſh land ſeldom any other grain than wheat and oats are grown, and in the rotation of, firſt, fallow; ſecondly, wheat; thirdly, oats; when the land is laid down with clovers, trefoil, and ray-graſs, for one two or more years. Sometimes on breaking up an older turf, the courſe is, firſt, oats; ſecondly, fallow; thirdly, wheat; fourthly, oats; with ſeeds as before. On the more mild and friable loamy ſoils, the courſe of cropping is, firſt, fallow; ſecondly, wheat; thirdly, beans or peaſe; fourthly, barley or oats; when the land is laid to graſs as before. In laying land down to graſs for more than one year, the white clover and trefoil are often ſown. On this ſort of ſoil "beans are ſown in the beginning, and oats at the latter end of March: Barley ſeldom ſooner than May;" although I think barley ſhould always be finiſhed ſowing in April. Wheat is principally ſown in October, but ſome little both ſooner and later. A vein of incomparable marl is found near Stafford caſtle, and in the neighbourhood of Eccleſhall, which in ſome places riſes to the ſurface of the earth, and the farmers plough into it. The Rev. Mr. DICKINSON informs me, that the farmers fallow here for wheat, and get good crops without manure. They reſerve the dung for the wheat ſtubble, and put it on in autumn for the benefit of the Lent tillage. This method ſecured afterwards a crop of beans and another of barley, which, when the dung was laid on the wheat fallow, were often unproductive. This appears a capital improvement, and of extenſive application. Marl has been formerly, and is ſtill much uſed on theſe ſoils. As it abounds in the under-ſtratum it ſhould be laid on ſparingly, otherwiſe it gives a harſhneſs to ſoils perhaps too ſtrong before. Lime is an excellent corrector of ſuch harſhneſs: it has the power of ameliorating ſuch ſoil, and in ſome meaſure

ſure of breaking and diſſolving its particles. It is much uſed, and with good effect, eſpecially after marling.

I have been informed that the following tillage for barley on theſe ſoils has been attended with ſucceſs, though not practiſed to any great extent. After ſummer fallowing for wheat, and harveſting the wheat crop, thoſe who practiſe it plough up in the November following the wheat ſtubbles in a proper form for ſowing, lay them dry by proper furrows or gutters, and ſow barley the April following without farther ploughing, as the amelioration of winter froſts diſpoſes the land to work kindly under the harrows without more tillage. To give this a fair chance of ſucceeding, the ſummer fallowing ſhould be managed in a complete ſtyle. This ſtrong ſoil will form good paſtures, as can be proved by here and there a piece of old turf, which is an excellent paſture; but the occupiers ſay it requires many years to turf. My neighbour Mr. MILLER, complains of this land being too much ploughed, obſerving that "it is worked with the plough till it is tempered enough to make bricks, and then the occupiers complain it will not graze." Perhaps a larger proportion of turf, by enabling the occupier to maintain more ſtock, and conſequently produce more manure, might be a means of producing an equal or ſuperior quantity of grain from a leſs breadth of acres. Mr. MILLER thinks the quantity of turf land on theſe ſtrong ſoils ſhould be increaſed, by laying a few more pieces to graſs, in proportion to the ſize of the farm, one piece in a year, clean and in good heart, with perennial red and white clover, trefoil, burnet, and graſſes, and afterwards mucking on the turf.

Secondly, The light ſandy or gravelly ſoils adapted to turneps. On this ſort of land the Norfolk ſyſtem of, firſt, turneps; ſecondly, barley; thirdly, clover; fourthly, wheat; has been long well-known and practiſed. The principal time of ſowing turnips is from New to Old Midſummer, but ſome are ſown both earlier and later: the land in preparation for turnips has generally four ploughings, and ſufficient harrowings between. The firſt ploughing ſhould be before Chriſtmas, the ſecond in March and well harrowed down, the third in May, and the fourth at ſowing. The manure uſed here for turnips is dung or lime, or both, or a compoſt of dung and ſoil. Near large towns, the dung of ſuch towns is often uſed; and near Birmingham in particular, I am well informed, the parings and ſhavings of bone and hoof duſt is applied with great ſucceſs. Turnips are in general hoed, and ſometimes a ſecond time, and weeded by hand; but it has not always been eaſy to procure hands for the whole of this buſineſs at a reaſonable price. It may perhaps be worthy of remark, that the turnips of the laſt year, 1793, in this country, were produced of the largeſt ſize ever known; commonly of the weight of from twenty-five to thirty pounds each; occaſioned undoubtedly by an uncommonly luxuriant Michaelmas Spring, and a mild open Autumn and Winter. The turnips are parted with hurdles, and generally eat on the ground by ſheep and calves, and it is common to draw a quantity of the largeſt for ſtall feeding. Some farmers having obſerved that this ſyſtem of the ſame crop every four years is hard tillage, and tires the ground, have given their fields two years reſt under the ſeeds; which makes the courſe, firſt, turnips; ſecondly, barley; thirdly, clover; fourthly, paſture; and, fifthly, wheat. The wheat often ſucceeds well upon a two-year lay, though I think not ſo kindly as immediately upon the clover. Some farmers, however, think they can obſerve no deficiency of crop on that account: ſome have totally omitted the growth of wheat on light land. Their courſe is, firſt, turnips; ſecondly, barley and ſeeds, paſtured for two or more years; and then ſometimes oats, on breaking up the turf: or, firſt, turnips; ſecondly, peaſe; thirdly, barley and ſeeds, as before. As in theſe courſes the great ſtaple, wheat, is neglected, I cannot beſtow on them any commendation, but ſhould prefer, firſt, turnips; ſecondly, barley with ſeeds; thirdly and fourthly, paſture two or more years; fifthly, peaſe; ſixthly, wheat. This is ſometimes practiſed, but is moſt applicable to land not too light or ſandy, but poſſeſſing ſome ſtaple of loam. The following courſe alſo is not uncommon, nor a bad one, upon land that is continued ſome years in paſture: firſt, oats; ſecondly, wheat; thirdly, turnips; fourthly, barley with ſeeds, paſtured for ſome years. It muſt be remarked, that whenever light land is ſeeded down with an intention of remaining ſome years in paſture, four pounds of white clover and four pounds of trefoil per acre, beſides graſs ſeeds, ſhould be ſown with the red clover.

Thirdly, mixed ſoils, compounded of, or inclining to ſand, gravel, or clay; the bottom various, ſand, gravel, clay, marl, or rock; including the thin black ſoils, and the calcareous ſoils, or thoſe on lime-ſtone.

The mixed ſoils on a gravel or clay bottom are very ſubject to be ſpringy. The water being pent in by beds of clay, is very apt to break out upon the ſurface through the gravelly ſtratums, and in wet ſeaſons to ſtarve and deſtroy whatever crop may be upon the ground; and this defect is extremely common upon moſt ſoils compoſed of a mixture of ſand or gravel; or clay, and the intercepting of ſuch ſprings, and conveying away their water by hollow drains, is a very extenſive and important part of agricultural improvement, equal in theſe reſpects to the draining of fenny land, at leaſt in this county: and to the credit of the preſent occupiers be it recorded, that great exertions have been of late years made, and are ſtill making in this ſpecies of improvement.

Fallowing for wheat is practiſed on cold wet or ſtrong lands by the beſt farmers, and is doubtleſs abſolutely neceſſary on all lands improper for turnips, (which all lands are, that are not ſufficiently dry to eat them on the ground by ſtock, for in ſuch lands the poaching and treading in carrying of the turnips will do much more injury to the land than the turnips are worth); and he who ſhall attempt to manage ſuch land without fallowing, will have occaſion to repent his miſtake. The Writer of this acknowledges himſelf to have been once a ſufferer by too implicit a confidence in the oppoſite theory. Fallowing is neceſſary, becauſe the roots of the perennial graſſes, ſuch as couch graſs, vulgarly here called ſquitch, cannot be ſufficiently weakened or extirpated without repeated ſummer ploughings; and without ſuch extirpation it is in vain to ſow wheat or other grain, becauſe ſuch grain will be much injured, and in ſome ſeaſons, particularly in a wet one, be choaked by the increaſe of ſuch graſſes. The graſs roots, called here ſquitch, are not of any one individual particular graſs, but of ſeveral of the perennial graſſes. What is called the black ſquitch, ſo troubleſome in dry arable land, is an *agroſtis* or bent graſs, uſually referred to the *agroſtis capillaris:* but Mr. Curtis aſſured me in London, this ſpring, that this graſs is not the *capillaris*, and that in his next arrangement of the graſſes he ſhall call this ſquitch graſs the *agroſtis repens.* The creeping red-ſtalked bent graſs *(agroſtis ſtolonifera)* is the worſt ſquitch graſs on ſtrong wet lands. The dog's graſs *(triticum repens)* is the ſquitch graſs of gardens. The tall oat graſs or bulbous-rooted ſquitch graſs is very troubleſome, and if ſuffered alive in the ground in wet ſeaſons, will increaſe prodigiouſly, and choak any crop. The creeping ſoft graſs *(holcus mollis)*, and ſeveral others of the perennial graſſes, will interfere with the growth of corn; and as they have all the habit, in ſome degree, of eſtabliſhing themſelves in the ground when it lays in turf, ſummer fallowing

ing becomes neceſſary for their extirpation previous to ſowing wheat, as this extirpation can be only very partially effected by hoeing, or in any other way than by repeated deep ſummer ploughings, and as the mixed ſoils now in queſtion, which are too moiſt for turnips, have a particular propenſity to the production of theſe graſſes, ſummer fallowing becomes abſolutely neceſſary; and every attempt to crop without it, for any length of time, on ſuch land, has terminated to the injury of the land and the loſs of the occupier.

The uſual culture and courſe of crops on the mixed ſoils of this neighbourhood are, firſt, fallow with four ploughings and manured with dung or lime, or both, or marl and dung, and ſown with wheat. Secondly, The wheat ſtubble pin-fallowed, that is, ploughed in autumn and laid dry, croſs plowed in March and harrowed down, and ploughed up and ſown with barley in April, with clover and other ſeeds, and then laid two or more years in graſs; after which it is again ploughed up, and oats are ſometimes ſown on the turf, which afterwards is fallowed again. The following mode ſeems a rational way of avoiding a total fallow, and is ſometimes practiſed, viz. Firſt, Oats on one ploughing of the turf. Secondly, The oat ſtubble dunged, ploughed at Michaelmas and ſown with winter vetches, to be eaten off the ground time enough for a fallow for wheat. Thirdly, Wheat. Fourthly, Barley with ſeeds, and then graſs for two or more years. Some of the courſes of cropping before named for ſtrong and light ſoils, are alſo ſometimes applied to mixed ſoils.

Vetches are often ſown in this county both in autumn, and ſpring; the former certainly by much the moſt commendable. I have this ſeaſon met an inſtance where a pretty good crop has been carted to the ſtable, and the whole piece cleared early enough for ſowing turnips in June. This will ſeldom

happen

happen here, and is attributed in this inſtance to the mild winter and early ſpring. Vetches would I think be more ſown, but the ſeed is generally dear, and the keep often not worth the ſeed, without running them on the ground ſo long as to interfere with the working of the fallow.

Rye is ſometimes ſown on a wheat ſtubble for early ſpring feed for ſheep, and eaten off early enough to work the ground for turnips. This on ſound early land may give feed enough to pay for the ſeed, as coming in at a time when keep is very valuable. Rye is little grown for a crop in this county, except on headlands or hedge ſides. Rye uſed ſome years back to be much ſown, mixed with wheat, on light land, but has been generally omitted ſince the introduction of the ſyſtem of wheat on clover lays.

Buckwheat (called here French wheat) has been grown both for ploughing under as a manure, and for a crop, but is in no very high repute, and no reſpectable experienced farmers would think of growing it unleſs upon new-incloſed or unimproved land. In the ſyſtem of ploughing it in as a preparation for wheat, it has generally been ſuppoſed to leave the land too light and porous; and for a crop, although the ſeed is a good food for hogs, pigeons, or poultry, it is not in general eſteemed equal to a crop of the uſual grain or pulſe. One of our native plants, nearly allied to this, ſtands recommended by Dr. WITHERING for cultivation; at which I ſuppoſe the practical farmer will laugh, though perhaps without a cauſe. this is the black bindweed, called here bearbind (*polygonum convolvulus*) which the Doctor prefers to buckwheat (*polygonum fagopyrum*). His words are theſe, after deſcribing the bindweed: "The ſeeds are quite as good for uſe as thoſe of the preceding "ſpecies, (referring to buck wheat) are produced in greater "quantity, and the plant bears cold better." The ſeed certainly contains a very fine white flour, and the plant is extremely prolific, but the grain is ſmaller than that of buckwheat. The farmers here conſider it as a troubleſome weed, twining round the ſtem of beans, wheat, or other grain, and fretting the plant: and the ſeeds, being of a triangular form, will not readily ſeparate, in dreſſing, from the grain with which it grows; it may probably be equally worthy of cultivation with the buck-wheat, as a food for hogs and poultry.

Hemp and flax are grown in this county, but upon a ſmall ſcale. Hemp is generally grown in ſmall yards, appropriated to that purpoſe, near houſes, or in the gardens of cottages, though ſometimes an acre or two is grown by a farmer after turnips; and I have known a few inſtances of large crops upon a deep black peat, well drained. Flax is generally grown upon a turf on one ploughing. Moſt leaſes have reſtrictions to prevent the cultivation of theſe plants on a large ſcale, and the tenants are often limited to an acre; although other farmers with open leaſes make no uſe of the privilege, ſuppoſing theſe plants will pay no better than the uſual grain, which I believe they will not, when grain bears a pretty good price.

Potatoes have been a good deal cultivated in various ways, and applied to the fatting of cattle and hogs: but the better ſorts will not pay for thoſe purpoſes, unleſs in very plentiful years, when they are cheap at market. The refuſe potatoes are very generally applied to fatting hogs, which they will bring on faſt when boiled and mixed with a little ground barley, and the inferior barley called tail-end; and even damaged barley will do for this purpoſe. The markets are principally ſupplied with potatoes by cottagers who have large gardens, or who rent land for the purpoſe of growing them: ſome alſo are grown by the ſmaller farmers. At Smethwick, near Birmingham, I obſerved upon a mixed ſoil ſome fields of potatoes in rows of a width to be plough-hoed;

they were managed in a good ſtyle, the land well worked and clean. They have been grown here in various ways; cultivated both with the plough and ſpade; and the culture well underſtood, as well as their application to fatting cattle; the quantity applied to which is regulated by the price of the market.

The cultivation of Cabbages in the field has been introduced into this county for ſome years, and practiſed in moſt parts of it upon a ſmall ſcale; many of my neighbours growing them regularly, as I have ſeveral times myſelf. This ſpring I obſerved, May 20, two fields of cabbages already planted between Croxall and Burton upon Trent. Alſo May 27, Mr. HARVEY of Dunſtall, who has been long a planter of cabbages, had ſome breadth-planted with autumnal plants, and intended finiſhing the field with ſpring plants. This is the true ſyſtem, as the former will be large enough for early uſe; and the latter will ſtand the winter for uſe in ſpring. He plants the Drumhead, and procures the ſeed from Scotland: I obſerved alſo cabbages planted near Okeover, and the ground well prepared: their culture and uſe are underſtood in moſt parts of the county. They are principally given either to ſheep, in which caſe they are carted to a turf; or to milking cows, whoſe milk they much increaſe without tainting the butter. Sometimes alſo they are given to feeding cattle, as they can be come at in froſt and ſnow, when turnips are buried, or locked in the ground. My neighbours, Mr. CORSER, Buſhbury, and Mr. MILLER, Dunſtall, have this ſeaſon, 1794, each of them a good portion of a turnip-field prepared for cabbages; Mr. MILLER's being now, June 25, in part planted, the others waiting for rain. They chuſe to plant them on three feet ridges, manured under the rows with ſoil left between the rows for one plough-hoeing: the hoeing is afterwards finiſhed by hand: ſome people plant them without

out ridging, ſpread the manure promiſcuouſly, and do all the hoeing by hand. Their uſe for milking-cows is rendered of leſs conſequence, by a diſcovery in conſequence of which turnips may be given to ſuch cows without tainting the milk, or its produce. A ſmall quantity of clear water, in which nitre has been diſſolved, added to the milk freſh from the cow, will take away every ill-flavour from the butter, though ſuch cow may have been fed ever ſo plentifully with turnips. I am ſince informed by my neighbour Mr. MILLER of Dunſtall, that they have been equally ſucceſsful in curing the taint from turnips, by putting a lump of nitre in the veſſel that holds the cream; and the cultivation of turnips being more ſimple, attended with leſs labour, and probably more kindly for the ground, they will on theſe accounts have the preference. Some farmers think cabbages are beſt grown on the ſame ſpot or flat of ground every year, which ſhould be allotted and incloſed for that purpoſe: others grow them in the turnip-field; and they are followed by barley, as it is generally convenient to reſerve them for uſe late in the ſpring: and as they are often grown on the ſtrongeſt ſoil of the field, the land drying and becoming cloddy, gives more trouble in making it fine for the barley crop, and may occaſion the idea of their leaving the land leſs kindly than turnips, although this may be owing to other circumſtances.

Turnip-cabbage has been cultivated by ſeveral perſons; but the uncouth form of the roots, and the difficulty of clearing them from the ground, has occaſioned them to be neglected; although they are extremely hardy, and might be of ſome uſe in the interval of time between turnips and graſs.

Rape (*braſſica napus*). This plant I have never known cultivated in this county for its ſeed, and many leaſes contain reſtrictions to prevent it; but it is ſometimes ſown on an early ſtubble for ſpring feed for ſheep, upon land intended to be ſown with turnips the enſuing ſummer: the ſmooth charlock is this plant in its wild ſtate.

To the courſes of cropping before ſtated, I ſhall juſt add that of the Moorlands, which is the worſt part of their management, deſtructive to the land, and certainly ignorant in the extreme. This courſe is generally, firſt, oats upon one ploughing of the turf; ſecondly, oats upon one ploughing of the ſtubble; and thirdly, oats after a winter fallow, with clover and graſs ſeeds; but the clover and ſeeds ſometimes omitted, and nature truſted to alone to form the turf. They have an idea that the land will not produce wheat, or not ripen it in time, and but ſeldom attempt it; but when they do, it is after fallow. They ſay it will grow a year from the ſowing. I have no doubt but its time of ripening would be much facilitated by introducing quickſet fences to ſhelter the country in winter, which is in general very high ground, very much expoſed to winter blaſts, and ſheltered only by low ſtone walls. With quickſet fencing and early ſowing, I have no doubt but any quantity of wheat required might be produced; but the country not being populous, and oat-bread in general uſe, the demand for wheat is not very great: its cultivation, however, as I underſtand, is increaſing.

## BROAD-CAST, SEED, AND PRODUCE.

THE major part or bulk of the ſowing buſineſs is done in the old broad-caſt way, though drilling is introduced, and has made ſome progreſs. The general allowance of ſeed to an acre in this way, is, of wheat, two buſhels or a little more: of barley, three buſhels; of oats, four to five buſhels; of peaſe, three buſhels; and of beans, I believe, four buſhels;

the buſhel of this county being nine gallons and a half. The returns or product vary, but to be deemed a good fair crop, ſhould be, of wheat, twenty-five buſhels per acre; of barley, thirty; of oats, thirty to forty; of peaſe and beans, various. Much greater quantities than the above have been obtained in particular caſes, and a bad crop full as often gives leſs. The largeſt well-authenticated produce of barley that I know of was raiſed a few years ſince upon Oxley farm, near Wolverhampton, where from twenty ſtatute acres of land, ſown broad-caſt, Mr. HUSKISSON carried to market, twenty loads of thraſhed barley, each load ſixty buſhels, and each buſhel nine gallons and a half, beſides the tail-end kept for his own uſe which could not be leſs than three ſuch buſhels from every load; making ſixty-three buſhels per acre of nine gallons and a half to the buſhel; or near ſeventy-five Wincheſter buſhels per acre. This ſtatement can be proved as a fact by the moſt unqueſtionable evidence. Wheat has ſometimes produced forty, and oats ſixty ſuch buſhels per acre.

DRILL HUSBANDRY. The drill huſbandry, as ſtated before, is fairly introduced, and has made ſome progreſs. I believe I could name a dozen farmers who have drill machines, one half of which are within a few miles of Pendeford. The machines uſed here do their work pretty well. There are two varieties of them; one invented by COOK, or an imitation of his invention; the other made under a patent granted to a perſon in Yorkſhire, and ſold here by Mr. JOSEPH CORNFORTH, machine-maker, at five guineas each. The delivery of grain in this is effected by hollows, or cavities, cut in a cylinder; that of COOK's, by ladles fixed in a cylinder. They either of them deliver ſeveral rows at a time, and may be conſtructed to deliver the rows at any given diſtance, they have been uſed for all ſorts of grain, but not generally;

ſometimes rainy weather obliging the owner to do part of his buſineſs broad-caſt. The following account of drilling I have from gentlemen who have been in the habit of practiſing that method of ſowing.

The Rev. Mr. DICKENSON, Rector of Blymhill, ſays, "I "have juſt introduced what ſeems to me a conſiderable im-"provement of Mr. COOK's drilling machine: it ſets the "drills at the diſtance of ſeven inches; an interval which in "the culture of wheat and barley is far preferable to nine. "Mr. SHENSTONE of Standyford has, I believe, the merit "of having planned the alteration, and gets the machines "fitted up: the price of one is about ten guineas, includ-"ing an allowance to Mr. COOK as Patentee. It will drill "wheat upon the clover lay, and I do not entertain a doubt "of its ſuperiority to broad-caſt ſowing, in light ſoils." I ſhall juſt add, that I have had the pleaſure of ſeeing two pieces of Mr. DICKENSON's drilled barley, but do not think it ſuperior to what might have been expected from broad-caſt ſowing.

I have received the following account from Mr. HIGGS, Cronkhall, near Wolverhampton.

"I have been in the practice of drilling grain by a ma-"chine for the laſt five years. I began with two acres of "barley upon a wheat ſtubble of the preceding year, in "1790. A wet ſpring ſucceeding filled my ground with "weeds; but by hoeing in June following, I had rather a "better crop than broad-caſt, in the ſame field; which gave "me hopes that if ever I ſhould underſtand properly the "drill mode, it might anſwer my end. About the Michael-"mas following, I ſowed ſix acres of wheat with the drill, "and in the ſpring of 1791, two acres of peaſe and two "acres of oats on a clover lay; as alſo five acres of barley "after wheat ſtubble: the wheat was part on barley and

" part on peaſe ſtubble. The wheat crop after barley was " very indifferent, but that after peaſe, though in the ſame " field, very great, being thirty-eight ſtrikes per acre, at " thirty-eight quarts to the ſtrike, which is equal to upwards " of forty-five ſtrikes Wincheſter. The oats were very " indifferent, but the peaſe produced a great crop; fifty " ſtrikes of our meaſure per acre. The barley alſo amounted to fifty ſtrikes of my meaſure per acre. I have ſtill " purſued the drill mode in preference to broad-caſt, where " I can have an opportunity of hoeing; or where the ground " has been made very fine by ſpring ploughing, even if I " cannot hoe, as when I ſow my ſpring graſs ſeeds: but the " greateſt improvement I have made by drilling has been " on an old lay turf, particularly in one inſtance of ten " acres. I ploughed the ground in October 1792, and drilled it with wheat: it was ploughed with a flay-plough*, " and no manure was uſed. In the April following it was " hoed with a hand-hoe, for which I paid three ſhillings per acre, " and beer. The field produced two hundred and ninety ſtrikes, " of thirty-eight quarts to the ſtrike. I am now making a " turnip fallow of the ſame field: it is a deep mixed ſoil, " rather inclining to a light ſoil. The ground which I " recommend for drilling, is a good deep ſoil, rather light, " and free from very long roots; but the cleaner the ſoil " ſhall be, as in all other huſbandry, the better will it be " for the crop. Before I ſow my wheat, I ſteep it one night " in a brine of ſalt and water, mixed up until it will bear an " egg new laid, which, I think, preſerves my wheat from " the ſmut. If afterwards uſed for drilling, it ſhould be " ſpread on a floor to be dried before it is uſed, to prevent it

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[*] See IMPLEMENTS of HUSBANDRY.

" from ſticking together, and ſhould not be dried with lime,
" as in the common broad-caſt way.

" There are four farmers within one mile of me, that uſe " the drill machine; and all their drilled crops now growing " look better and much preferable to their broad-caſt: but " ſpeaking for myſelf, I give the preference to drilling, which " will be ſeen by the following account of my crops, now " growing as under, and in which the drilled look far better " than the broad-caſt. In ſhort, the drill has far exceeded " the broad-caſt each year I have uſed it, beſides leaving my " land, where I can hoe it, cleaner from weeds.

## CROPS OF THE PRESENT YEAR 1794.

| | Drilled Acres | Broad-caſt. Acres |
|---|---|---|
| Wheat - - | 18 | 7 |
| Barley - - | 17 | 1 |
| Peaſe - - | 9 | — |
| Oats - - | — | 3 |
| Total - - | 44 | 11 |

Total 55 Acres"

I ſhall juſt obſerve, that Mr. Higgs's arable land is generally a good deep light loam; and that other farmers who have tried the drill machine, generally ſpeak in favour of the practice.

Reſpecting the advantages of drilling, and its ſuperiority to broad-caſt ſowing, the following advantages are obvious: 1. The vacant ſpaces between the rows can be much eaſier cleaned by the hoe than between the plants in broad-caſt ſowing; 2. The ſeed is laid in at a more proper and equal depth than by the harrows; and, 3. A ſaving of ſeed may be effected of, I believe, one-fourth of the whole. In ſome other reſpects, theoretically conſidered, the broad-caſt ſowing ſhould ſeem to have the advantage. For, 1. The young plants promiſcuouſly diſpoſed will have a leſs diſtance to draw their nouriſhment, and will occupy the whole extent beneath the ſurface with leſs effort, and with ſhorter root fibres, than when crouded in rows with open ſpaces between. 2. The broad-caſt ſowing is rather more ſimple and eaſy in operation, and leſs liable to be obſtructed by change of weather or ſhowers. 3. In the caſe of ſowing graſs ſeeds with barley, which is or ſhould be always practiſed, the advantage of hoeing is loſt; and in the ſteeping of wheat for ſowing, the drying with lime is loſt; in which probably a great part of the health of the operation conſiſts; and the drying by ſpreading the ſeed on a floor ſeems tedious, and a work of time. It is further to be obſerved, that for land to be fit for drilling, it ſhould be clean from root-weeds, and in a fine ſtate of culture. I have heard a very ſenſible experienced broad-caſt farmer remark, that when his land is in that ſtate, he can do anything with it, or get a good crop in any way. I have juſt further to remark, that I did ſome years back attempt the drill ſyſtem, with a view of aſcertaining how far foul land, or ſuch as wanted fallowing, could be cleaned by hoeing between the rows, hoping there might be a poſſibility of precluding the neceſſity of ſummer fallowing; but not ſucceeding to my mind in this particular, I declined the practice. I would not wiſh by any means to be underſtood to have the leaſt wiſh to diſcountenance the attempts of others, as I conſider the practice of drilling and hoeing the fields in a good ſtyle as a very neat mode of culture; and he muſt always be eſteemed an improver of the agriculture of his country who ſhall obviate the difficulties attending the drill, and the objections to it, ſo as to render it of more general utility to the united kingdoms.

Mr. Miller, Dunſtall, is a friend to the drill huſbandry, which he practiſes on a conſiderable ſcale. He has ſome barley this ſeaſon which promiſes to be an excellent crop: it is but juſtice, however, to remark, that the broad-caſt in the ſame field is equally good.

Seed-time and harvest. The ſeed-time in this county commences in March, and ſhould always be finiſhed in April, but ſometimes in ſome places hangs on through a great part of May. The hay harveſt is from the middle of June to the end of July. Corn harveſt is in Auguſt and September; but in ſome early ſeaſons peaſe, oats, and barley, have been harveſted about the end of July.

Steeping of seed. The ſteeping or pickling of ſeed wheat previous to ſowing is pretty generally practiſed here, and its propriety eſtabliſhed by the moſt weighty of all arguments, namely, by the moſt deciſive experimental proofs of its good effect in preventing the ſmut. Various ways are uſed. That moſt generally approved is, to immerſe the wheat in a brine of ſalt and water, or urine, mixed up ſtrong enough to ſwim a new-laid egg; and then ſtirring it well up, to ſkim off whatever ſwims on the ſurface; and after taking it out, or letting off the brine, to dry it with quicklime to a ſtate for ſowing. In this proceſs the hydroſtatical improvement of the ſeed is evident, by ſeparating from it every ſeed and grain deficient in ſpecific gravity; and I have never known or heard a well-authenticated inſtance of its failure in completely preventing the ſmut; a diſeaſe in wheat which whoever is well acquainted with, muſt think ſerious indeed. The ingredients here uſed carry with them the idea of health, and are worth all the expence and labour as manure.

**Weeds.** The weeds to which arable land is ſubject, are a great plague to the plough farmer, and it is chiefly to their predominance that the neceſſity of ſummer fallowing is to be attributed. The following are the principal weeds that the plough land of this county is moſt ſubject to, in which thoſe before enumerated as paſture weeds are omitted.

1. Couch graſs, called here ſquitch, that plague and curſe to arable cultivation. The term ſquitch ſignifies the roots of perennial graſſes; of no one particular, but of ſeveral ſorts; particularly the bent graſſes *(agroſtis's)*, the dog's graſs *(triticum repens)*, creeping ſoft graſs *(holcus mollis)*, tall oat graſs *(avena elatior)*, and ſome others. The roots of theſe are ſometimes ſo interwoven with the ſoil in hard tilled, worn-out land, as to form a perfect mat, and to choak the plough: they abound moſt in light and mixed ſoils, and are only to be deſtroyed by repeated ſummer ploughings, or by forking them out and burning them.

2. Coltsfoot *(tuſſilago farfara)*; very apt to abound in hard tilled land. LORD HAWKE informed me at the Board of Agriculture, " that the only time to deſtroy this weed is by cutting it up in thoſe months when it begins to throw its flower; at which time if ſo cut, it will bleed to death." Theſe months are February or March. Neglected at this time, it will ſoon after ripen its ſeed, which, furniſhed by nature with feathers or wings, flies all over the country, and therefore eſtabliſhes itſelf very quickly on banks of earth newly thrown up. This weed may be conſiderably weakened by repeated ſummer ploughings, and may then, for the greateſt part, be weeded out, as the ground is thus rendered light.

3. Common or way thiſtle, curſed thiſtle, or ſow wort *(ſerratula arvenſis)*, growing everywhere, may be weakened by good tillage and weeding, but not totally deſtroyed. This weed ſeems almoſt naturally produced by the ſoil, in

conſequence of the curſe, "thorns alſo and thiſtles ſhall it "bring forth unto thee;" yet doubtleſs, ſtrictly ſpeaking, produced only from its numerous fibrous roots, which are ſtrictly perennial, and from its more numerous ſeeds, which are feathered, and can fly to any diſtance with the wind. This plant can only be eradicated by univerſal agreement to cut it up before it ſhall ſeed.

4. Charlock, or chadlock. The yellow-flowered weed termed chadlock by the farmer, is not one individual, but three ſeparate and diſtinct plants, each ſpecies more or leſs abounding in different places. They are as follow: 1. The rough-leaved chadlock, or wild muſtard (*ſinapis nigra*); 2. The ſmooth-leaved or wild rape (*braſſica napus*); and 3. The rough-leaved wild radiſh, with whiter flowers (*raphanus raphaniſtrum*). Theſe plants are all annuals, produced entirely from ſeeds, which they bear in great abundance, and which ſeeds will lie in a clod as ſafe as in a granary, and vegetate at the end of twenty years, when ploughed up and expoſed to moiſture. Theſe intruders are only to be extirpated by ploughing them under when the field is fallow, or by weeding them out of the crop before their ſeed ſhall have been ripened; for if ſuffered to perfect and ſhed their ſeed, each ſingle plant will produce an hundred; the farmer ſhould therefore carefully prevent this by weeding or hoeing them out in time.

"One year's ſeeding makes ſeven years weeding," is an apophthegm which ſhould be ſtrongly imprinted in the farmer's memory. The increaſe of the above and ſome other of our field weeds when they are permitted to ſhed their ſeed, is beyond all calculation.

5. Ivy-leaved ſpeedwell (*veronica hederifolia*), ſometimes very much abounding amongſt wheat very early in the ſpring, but ſeeding and leaving the ground early, and perhaps not

much injuring the crop, would probably be beſt deſtroyed by working and pulverizing the fallows very early in the ſeaſon, which would occaſion the ſeeds to vegetate, and the plant would be deſtroyed by ploughing it under without giving it time to perfect its ſeeds.

6. White darnel *(lolium temulentum)* is produced from ſeed ſown from wheat, to prevent which great care ſhould be taken. This weed is extremely prolific, and very injurious to a wheat crop when growing, and to its value at market: it is an annual plant, which may be avoided by attention in the choice of ſeed.

7. Gooſegraſs, catchweed, or cleavers, called here Eriff *(galium aparine)*. I have known this plant very troubleſome in a wheat crop, twining and crawling up the ſtraw or ſtem, but is not very common in well-managed land.

8. Bindweed *(convolvulus arvenſis)*; a troubleſome paraſitical weed, but not ſo abundant here as I have ſeen it in ſome of the chalk counties.

9. Shepherd's needle, here beggar's needle *(ſcandix pecten Veneris)*; ſometimes very abundant in hard tilled land, and its ſeed not eaſily ſeparated from corn in dreſſing or winnowing.

10. Common chickweed *(alſine media)* abounds moſt in land rendered fine by repeated ploughings.

11. Pale arſmart or lakeweed *(polygonum penſylvanicum)* abounds moſt in wet ſeaſons, on moiſt land.

12. Black bindweed, or bearbind *(polygonum convolvulus)*. This is alſo a paraſitical plant, twining round any thing it can lay hold of. Dr. Withering recommends it for cultivation, preferring it to buckwheat, to which it is nearly allied.

13. Bladder campion *(cucubulus behen)*; often growing amongſt barley on light land.

14. Cockle (*agroſtemma githago*). Care ſhould be taken not to ſow this weed, it being very injurious.

15. Corn poppy (*papaver rhoeas*); ſometimes very abundant on light land in dry ſeaſons, and a pretty ſure indication of a light crop.

16. Corn crowfoot (*ranunculus arvenſis*). I have ſeen this plant ſo abundant, as to be very injurious to a wheat crop on ſtrong moiſt land.

17. Dead nettle (*lamium purpureum*); abounding ſometimes and on ſome lands in wet ſeaſons.

18. Bugle (*ajuga reptans*); common in wet ſeaſons.

19. Shepherd's purſe (*thlaſpi-burſa-paſtoris*), well known ſometimes as a troubleſome weed.

20. Fumitory (*ſumaria officinalis*); abounding ſometimes on land in fine tillage, but not very pernicious.

21. Tare (*ervum tetraſpermum*); a terrible enemy to a wheat crop where it abounds. Care ſhould be taken to purge land intended for wheat, of this plant, by fallowing and repeatedly harrowing it fine. All land is ſubject to it previous to ſowing the wheat. The ſeeds are good food for pigeons and poultry.

22. Groundſel (*ſenecio vulgaris*); a garden weed, but not uncommon in corn-fields in a good ſoil. It ſhould be deſtroyed previous to ſhedding its ſeed, by weeding out or ploughing under: its ſeeds ripen rapidly, and fly over a country by the wind. It abounds in the hop grounds in Kent, and is conſidered there as a ſign of land in good condition.

23. Corn marigold (*chryſanthemum ſegetum*); ſometimes very troubleſome and injurious to a crop.

24. Stinking chamomile or may-weed (*anthemis cotula*); a diſagreeable and troubleſome weed.

25. Knapweed, or blue buttons (*centaurea's of ſorts*); not eaſily prevented or deſtroyed on ſome lands.

26. Corn horſetail (*equiſetum arvenſis*); a hardy perennial root weed, not eaſily deſtroyed.

27. Female fern (*pteris aquilina*) abounds moſt in very dry ſandy land.

Summer fallowing well managed has a tendency to extirpate all ſorts of weeds; for the pulverizing of the ſoil by frequent ploughings and harrowings, combined with the effects of dews, ſhowers, and the ſolar warmth, diſpoſes the ſeeds, roots, and prolific principles of all plants to vegetation; which vegetation being effected, and the young plant in a growing ſtate, it is completely deſtroyed by the next ploughing: this ſeveral times repeated, purges the land of weeds, and its whole vegetative force is in conſequence directed to the ſupport of the particular vegetable whoſe ſeed is thrown in by the cultivator; or ſhould a few weeds remain undeſtroyed, they are to be drawn out or cut up by weeding. Upon theſe conſiderations are founded two very obvious and juſt principles of practical agriculture, viz. 1. the neceſſity of ſummer fallowing ſoul land; 2. the propriety of being very careful in the choice of ſeed.

## TITHES.

THE queſtion of tithes having been pretty much and pretty often agitated and examined, I cannot expect to be able in this Report to throw any new light on the ſubject; I ſhall, however, ſtate my ideas of the effect they have on agriculture; and if that effect ſhall appear prejudicial, ſome mode of preventing or remedying the evil may be propoſed, without doing injury to any of the parties intereſted.

Tithes having been formerly appropriated for a particular purpoſe, muſt be admitted as a property equally ſacred with any other, eſpecially as that appropriation is admitted by thoſe laws which regulate the country where the tithes are produced; and although a conſiderable part of the property ſo appropriated has ſince been alienated from its original purpoſe, yet ſuch alienation having been admitted and confirmed by thoſe laws which protect all other property, no friend to juſtice and the ſtability of property can expect an exoneration from, or an abolition of tythes, without propoſing and providing an equivalent.

Having ſaid this, I muſt at the ſame time confeſs, that tithes being a heavy tax upon the efforts and exertions of human induſtry, are in a conſiderable degree a prohibition of ſuch exertion, and in that reſpect act as a dead weight and a check upon that ſpirit of improvement which it is good policy to encourage by every means that can be deviſed. If an equivalent can be found, and a commutation be effected without injury to any one concerned, ſuch regulation would doubtleſs be an improvement in our political ſyſtem.

The following plan is propoſed as the outline of an exchange of tithes for land, as land will always bear a value proportioned to that of its produce, and even the price or value of labour is meaſured by the ſame ſtandard.

Let an act of parliament appoint in every dioceſe an equal number of the moſt reſpectable clergy and country gentlemen Commiſſioners and Truſtees, and with a power of nominating ſurveyors to value all the tithes belonging either to the clergy or the laity within the dioceſe; and let the act give an option to the land-owners of purchaſing their reſpective tithes at the valuation fixed on them by ſuch ſurveyors; the money ariſing from ſuch redemption might be inveſted in the funds, or other ſecurities, until a proper opportunity ſhould offer of laying it out in land; and where the land-owners ſhould refuſe to purchaſe ſuch tithes, the Commiſſioners might have the power of mortgaging them, or of taking up money on their ſecurity, to be inveſted in the ſame way with that ariſing from tithes actually ſold: or, after a given time, the Truſtees might be impowered to ſet apart an allotment of the land of thoſe owners who refuſe to purchaſe, and which, if conveniently ſituated for the former tithe-owner, might be ſo applied, otherwiſe ſold, and the money ariſing from ſuch ſale inveſted as before, until it could be laid out in the purchaſe of land. The execution of ſome ſuch plan would be attended with infinitely leſs trouble and expence than that now incurred by the annual valuation of tithes, as, ſhould the propoſed regulation be once effected, the buſineſs would be ſettled for ever; but under the preſent ſyſtem, the ſurveyor or valuer's buſineſs is continued from year to year, and if that ſyſtem ſhould continue, will be from generation to generation. An equivalent in land muſt certainly be a more ſolid property than tithes. Land may be improved in any degree by good management and induſtry; tithes fluctuate or ſink in value at the will of the cultivator. I think ſome ſuch commutation as this may be eaſily effected; and then all parties would be pleaſed with the alteration.

## IMPLEMENTS OF HUSBANDRY.

THE implements of huſbandry uſed here for draught, are waggons and carts; for tillage, double and ſingle ploughs, with and without wheels; drill ploughs, harrows, and rollers for other purpoſes; winnowing machines, ſtraw engines, &c.

The waggons are either with ſix-inch wheels, or narrow wheels: a few of the former, kept by the larger farmers, in which ſix horſes are drawn double, convey a load of from three to four tons. The narrow-wheel waggons are drawn by four or five horſes, and carry from two to three tons. Six-inch wheel carts are moſtly uſed about farm-houſes for conveying dung, or for gravel or ſtones for repairing roads; or for hollow draining. Some few narrow-wheel carts are chiefly kept by ſmall farmers for the road: one-horſe carts alſo are kept by gardeners, butchers, and people who ſupply the markets. The wheel carriages of this county are upon a pretty good conſtruction, perhaps not capable of being much improved: they are, I think, if any thing may be condemned, rather too heavy, and ſhould be conſtructed lighter, if it could be done conſiſtent with the giving them a ſufficient degree of ſtrength. Double or two-furrow ploughs are much uſed, and anſwer well on light ſoils, where four horſes will plough two acres or more per day. Theſe ploughs are made on a good conſtruction, and require no holder. The ſingle-wheel plough is a very good tool, requiring no perſon to hold or touch it, except when it is turning at the end of the furrow; they require but one attendant, for which a boy of fourteen or fifteen years of age is ſufficient. And here I cannot but remark the ſuperiority of a plough that requires no holder, but a perſon only to drive the horſes, and turn it out and in at the end of the furrow, to one which requires to be held, and the horſes of which are guided by reins. Theſe ploughs have lately been much improved by the addition of an iron earth-board firmly ſcrewed to the coulter, called here a flay, for ploughing turf, which takes off the turf and turns it into the furrow, where the plough immediately covers it with earth: by this management a turf at one ploughing has the appearance of a fallow, and harrows nearly as well. This ploughing is attended with ſcarcely any extraordinary trouble, but requires the ſtrength perhaps of an extra horſe. It is much uſed here for turf. The common ſwing plough without wheels is uſed to plough hedge-ſides, ill formed corners, or any difficult work: it requires both a holder and a driver. The drill ploughs uſed here are of COOK's invention, or an imitation of it; or another made in the North, and ſold here by Mr. JOSEPH CORNFORTH, machine-maker. The laſt is the cheapeſt. They both do their work well, and cover up the ſeed at the ſame time; which covering is farther perfected by rolling. The harrows uſed here have nothing ſingular in them. The common roller is uſed, and ſometimes the ſpiked roller, on ſtrong land with good effect. Large heavy caſt-iron rollers of from one to two ton weight are uſed, and are excellent for meadows, or for rough or cloddy arable land: they require however a good ſtrength of horſes to draw them. I have lately ſeen a common corn roller, conſtructed of two pieces inſtead of one, being cut through, as it were, and hung with gudgeons in the middle; the advantage of which is, that in turning, it is leſs liable to root up the corn, and may be formed of two ſhort pieces, inſtead of one longer. Machines for winnowing, or dreſſing corn from the chaff, have been long in uſe here: they are now brought to great perfection, and do their work completely, and with diſpatch, requiring not more than about half the time neceſſary in the common way. They are made upon the very beſt conſtruction by Mr. Joseph Cornforth, at Buſhbury, near Wolverhampton; the price from ſix pounds to ſeven guineas each. Upon the whole, the machinery and implements of this county are tolerably good, and little ſeems wanting in this way; and I cannot help thinking, I hope without partiality, that our implements in general, but ploughs in particular, are equal to any, and ſuperior to moſt which I have ſeen; and I have viewed thoſe of many counties. Mr. Miller on this ſubject makes the following remark: "The ploughs made in "any country where the plough-men have been moſt uſed to "them, are the beſt. For when I came to this place, I brought "with me ploughs and plough-men out of Leiceſterſhire, "which were good ones ſo long as my Leiceſterſhire-men "ſtaid: but when they left me, they might as well have "taken the ploughs along with them; for Staffordſhire-men "could not plough with them." This remark may ſerve to ſhew the difficulty of altering eſtabliſhed cuſtoms, and that ſuch alterations, even if improvements, muſt be gradual, and introduced by degrees; as the ſame workmen are not brought at once to uſe a new tool expertly: and unleſs they in ſome degree approve of any new practice, to make a fair experiment, the maſter muſt give his own attention, and do the buſineſs himſelf.

## HORSES AND OXEN FOR DRAUGHT.

HORSES for the farmers uſe, are almoſt univerſally uſed by the farmers in this county, and ſeem almoſt totally to have ſuperſeded the uſe of oxen; and are ſtill gaining ground, and oxen at the plough are but very little uſed. The reaſon ſeems to be, the great ſuperiority of horſes as to diſpatch, and with which a leſs number of ſervants will do the ſame buſineſs, than can poſſibly be done with oxen; and a number of ſervants being one of the heavieſt of the farmer's expences, horſes are found upon the whole to do the buſineſs cheapeſt. This is by no means theory; for the experiment has been made by many farmers, who, if it had been found their intereſt, would certainly have given the preference to oxen. Amongſt other large farmers, Mr. LOCKLEY of Boſcobel, who, though in Shropſhire, lives on the borders of this county, perſevered in the compariſon for ſome length of time: the following is his opinion.

" The land of this neighbourhood, and of Staffordſhire in
" general, is a marl, and not well adapted for ox teams: par-
" tially it may; and where the turnip or ſandy land will ad-
" mit their uſe, there cannot exiſt a doubt of their utility:
" they muſt work eaſy, or they cannot get on at all. And
" they appear to me beſt adapted to carting out manure. Six
" oxen are neceſſary upon the marl or wheat land in Stafford-
" ſhire; nor will that ſort of land always admit of a wheel-
" plough, attended only by one ſervant. Six oxen would
" work a two-furrow plough in the light turnip land: that
" alone is the ſoil to which they are adapted, and of which
" Staffordſhire has but a ſmall proportion.

" Oxen are as three to two, to horſes upon light land, and
" as two to one upon ſtrong; but oxen will not be even in
" that proportion without an addition of keep and care in the
" winter."

I knew an inſtance ſome years back of a capital farmer, upon light turnip land, who always recommended the uſe of oxen to others, but never uſed one himſelf, though the extent of his buſineſs was ſuch as to find employment for near twenty horſes.

Some few oxen are reared, and even fatted here, without being ever drawn: the owners think it more their intereſt to keep them at paſture; and they certainly ſhould be, and doubtleſs are, the beſt judges of what is moſt likely to turn to their own advantage.

Sir EDWARD LITTLETON is the greateſt maſter of draught oxen in the county. He has now no leſs than eighteen employed in carting coal, gravel, his hay harveſt, or any thing elſe wanted; but I believe not at all in ploughing. They are drawn ſingle in harneſs, geared exactly in the manner of horſes, with the collars inverted, and open at bottom. Oxen for draught have been ſtrongly recommended to the tenants; but very few, if any, are in uſe on the whole eſtate, except thoſe kept by the Landlord. I have no doubt but they would readily and gladly ſecond the views of their Landlord in this particular, were it at all compatible with their reſpective intereſts: but the land is moſtly ſtrong, and the few who have tried oxen have declined them. Oxen were formerly much more uſed in this country than at preſent. As a more extended and improved cultivation has taken place, and the price of human labour has increaſed, they have gradually given way to horſes. Agreeably to which idea I ſtill find oxen now moſt prevalent in backward countries; and more ſo in Wales than in England, where I have lately ſeen them in yokes, crawling at a rate ſo ſlow, that no farmer here could bear to ſee it with patience. The fact is, that every attentive cultivator will do his buſineſs in the beſt and cheapeſt way he poſſibly can; and he muſt be a much better judge of this queſtion than any theoriſt can poſſibly be: and the ſingle fact of horſes being preferred, is a ſufficient proof of their ſuperiority. In a public point of view, perhaps, the difference is leſs than has been generally ſuppoſed; for were oxen kept for draught inſtead of horſes, though a farm might produce more beef it would produce leſs cheeſe and butter, which laſt have generally of late been rather the ſcarceſt articles.

## FARM-HOUSES AND OFFICES.

RESPECTING farm-houſes and offices little can be ſaid in general, except that thoſe of ancient date appear often built merely by chance, without deſign or contrivance, whilſt thoſe of modern conſtruction are ſometimes well contrived, comfortable, and convenient. Moſt of the modern ones are built with brick, and covered with tile or ſlate. The barns, cow-houſes, ſtables, and offices, are laid out ſo as to ſhelter a compact yard, and ſome inſtances occur of good convenient feeding-ſtalls; but moſt of the old ones are very defective in theſe particulars, and the occupier is obliged to make ſhift as well as he can.

In the conſtruction of farm-offices œconomy ought doubtleſs to be kept in view, and the money ſo laid out as to pay an intereſt to the proprietor; which will always be the caſe in real conveniences, for which the occupier had better pay intereſt than go without them.

In a regular farm, after a decent and comfortable houſe, the next buildings requiſite are barns ſufficiently roomy, with ſtraw-ſheds near enough for the threſher to deliver the ſtraw to the cattle, with a well-fenced rick-yard, ſecured from treſpaſs, near the barns. Stables for horſes, cow-ſtalls, and calf-houſes, and a feeding-ſhed alſo on a proper ſcale, is a good appendage to every farm. A Dutch or hay-barn, on an œconomical and durable conſtruction, would ſave the occupier ſo much trouble in thatching that he could afford to pay a conſideration for it. This ſhould be in the moſt convenient ſituation for the cowhouſes, where the hay is conſumed. Hogſties and troughs of durable materials, and in a convenient ſituation, are alſo neceſſary. Theſe particular conveniences are well underſtood, and in ſome places have been properly attended to, but in many others are very defective.

Leaſes are often granted: thoſe for twenty-one years are not uncommon, and ſome alſo for a ſhorter term exiſt. In moſt covenants fallowing is conſidered as neceſſary. Hemp, flax, and rape for ſeed are prohibited or reſtricted to an acre. Meadow land is ſecured from the plough. Tenants are reſtrained from cropping and lopping timber, and from taking more than a ſtated number of crops; alſo from ſelling hay, ſtraw, or dung. I do not recollect many other remarkable covenants. Thoſe for ſecuring the rents are of courſe. Sometimes ſyſtems of cropping are inſerted, but little attended to, if the tenant be ſuppoſed going on well. The tenant is generally tied to keep the buildings in repair, the landlord finding materials. Many gentlemen who have large eſtates round their ſeats, or in their neighbourhood, do not grant leaſes, upon the idea of ſuch grants rendering their tenants independent; and to the honour of many ſuch gentlemen it may be obſerved, that the poſſeſſion of their farms upon ſuch tenure is equally ſecure with a leaſe, and that whilſt the occupier behaves with propriety, he is as little liable to be diſturbed in poſſeſſion, and often rents upon eaſier terms.

## WAGES AND LABOUR.

THE price of labour and the rate of wages vary in different places. They are always higheſt in the neighbourhood of flouriſhing manufactures, and loweſt in remote parts of the country where no ſuch manufactures are eſtabliſhed. The wages of a day-labourer vary in this county from one ſhilling to one ſhilling and ſixpence per day and beer. In the ſummer quarter, one ſhilling per day, with meat and drink, and the draught or carriage of a load of coals, is very common here. Much of the labour is let by the great at prices which enable a good workman to get two ſhillings or more per day and beer. Hedging and ditching are done by the perch, running meaſure; digging, by the ſquare perch or rod; threſhing, by the buſhel: four-pence per buſhel for wheat, two-pence for barley, three-halfpence for oats are the prices generally given, beſides an allowance of beer, and a payment by the day for dreſſing or winnowing. Graſs is mown at about two ſhillings per acre and beer; wheat is reaped for five ſhillings per acre and dinner, or whole board and beer, or thereabouts; it varies a little in different places. The hours of labour are, in winter, from light to dark; in ſummer, from ſix in the morning to ſix in the evening; in harveſt, from the time the dew is off in the morning to night, in reaping and carrying; and at other work, according to the emergency of buſineſs. The price of labour has increaſed within the laſt two years about one tenth, or ten per cent; and the ſummer or harveſt labour rather more; which has been ſuppoſed to be cauſed by the Canals cutting in the county, where a ſtout labourer can get two ſhillings and ſixpence and three ſhillings per day, without beer. Perhaps this advance is but juſt, and in proportion to the advance of the neceſſary articles of life.

## SOCIETIES, BENEFICIAL PRACTICES, PROPOSED IMPROVEMENTS, AND OBSTACLES TO IMPROVEMENT.

THERE are no Societies in the county that I know of for promoting agriculture. The principal inducements are good markets, ſelf-intereſt, and perhaps in ſome degree a ſpirit of emulation between different occupiers, from which inducements ſome of the farms have been brought to a pretty correct ſtate of good cultivation, and which will be ſtill farther improved if all the above inducements ſhall continue. Mr. BRADBURNE obſerves, reſpecting Societies, "I "have not heard of any. I ſhould have been much pleaſed "could I have anſwered in the affirmative." Reſpecting a turn for improvement, "I never at any period obſerved "this neighbourhood ſhew more inclination to purſue the "preſent improved ſyſtem of huſbandry:" and reſpecting real improvements, "A more regular ſyſtem of ſummer fallowing, "and of not taking above two crops afterwards, would be "more productive of both grain and ſtock."

Amongſt the beſt practices of the county, one ſhould have been mentioned more fully before, which is the extenſive application of lime as a manure, of which great quantities are annually and conſtantly uſed upon all ſorts of land. It is ſuppoſed to attenuate, break, and divide ſtrong ſoils, to bind and contract ſandy ones, and to correct the acidity of old ſour uncultivated lands. Its utility is very generally admitted. It is laid on at the rate of from ſix to ten quarter per acre; the price at the Works being from three ſhillings and ſixpence to four ſhillings and threepence per quarter, and the carriage and other expences nearly, and at ſome diſtances quite, as much as the prime coſt. It is generally laid on fallow in ſpring or ſummer, and harrowed in, and is uſed both for turnips and wheat, and I think in a more extenſive way than I have obſerved elſewhere. The improvement of land by marling alſo has been long practiſed, and in a very extenſive way.

The great Improvements of which this county is capable, ſeem to be chiefly the following: Firſt, The cultivation of its waſtes and unimproved land. Secondly, Extending the practice of improving land by irrigation, or watering, to all places capable of that improvement, and wherever the water is not already appropriated. Thirdly, The embankment of rivers to prevent the deſtruction of hay, with ſluices conſtructed through ſuch banks, to let through the water for irrigation at pleaſure. A work of this kind I had the pleaſure of ſeeing upon the Trent below Stone. But for this buſineſs to be done in the beſt manner, it ſhould be taken up in a general way. Fourthly, Draining of fenny or ſpringy lands. Much has been done, and much remains to be done in this way. Fifthly, The cultivation of the better and finer graſſes, clean and unmixed with weeds, at the time of laying land to graſs; and though nature be very bountiful, and ſoon fills the turf ſpontaneouſly, yet there is great reaſon to believe this work would be much improved and facilitated by art and induſtry. Theſe, with the extenſion of the beſt parts of our preſent practice, ſeem to conſtitute the higheſt perfection of agriculture to be expected at preſent, and indeed would add greatly to, and very much increaſe the landed products of the county.

Amongſt the obſtacles to improvement tithes have been already mentioned.

Another great obſtacle to improvement is perhaps, pretty often, the want of ſufficient capital in the occupier, not ſo much for the purpoſe of ſtocking his farm, as for that of puſhing forward and getting through thoſe undertakings which may be neceſſary to make his farm productive; the capital wanted upon a farm of any extent being very conſiderable; eſpecially if ſuch farm be in a backward or unimproved ſtate. For though five pounds per acre may be a pretty good allowance for capital upon land already improved, it is by no means ſufficient under different circumſtances, and where a number of improvements are wanting. Fencing, ditching, draining, marling, liming, town manure, with the purchaſe and neceſſary ſupport of ſtock till the effects of ſuch exertions can come round, form obſtacles inſurmountable to a ſmall capital; and the riſk is too great for ſuch to run, for fear of failing in the attempt. In all ſuch caſes I think the landlord ſhould come forward by himſelf, or his agent, to advance money upon real permanent improvements only; ſuch as draining, purchaſe of lime or dung, manuring on the turf of land in a fit ſtate for permanent paſture; and ſhould charge to the tenant intereſt (ſuppoſe at five per cent) for money ſo advanced. This, I think, would be a prudent reſervation in leaſes—for the landlord to have power to lay out money in this way, and lay the intereſt on the rent; having not the leaſt doubt but all money judiciouſly ſo laid out, would anſwer the purpoſe of every party concerned: of the landlord, by improving his land, giving him intereſt for his money, and the beſt ſecurity: of the tenant, by a certain and permanent improvement of his farm, which would well enable him to pay the additional rent: of the public, by removing an obſtacle to, and by furthering the means of national improvement.

My neighbour, Mr. Fowler, of Erdington, mentions the following obſtacles, which he thinks ſhould be removed. "The preſent law in limiting the number of horſes on "turnpike roads is not one of the leaſt. If all carriages "were limited to weight only, that muſt and would have "the deſired effect of keeping the roads in good order. "Suppoſe ſix horſes were allowed inſtead of four, two of "them would moſt likely be breeding mares or young horſes "likely to improve; the ſix would not require to be ſo large "as if four only were kept, but of a lighter nimbler ſort, "and would be kept at a leſs expence than four, that are "required to do what the ſix ſhould do. There would be "more probability that the ſeed would be ſown in due ſeaſon, "that the harveſt would be finiſhed quicker, that more lime "would be obtained for carrying on other improvements of "the farm with the horſes. I alſo think, if the tolls at turnpikes were collected by the weight drawn, it would be much "fairer than the preſent mode of collection by the number of "horſes. There is another obſtacle to the improvement of "land, the employment of Attorneys-at-law by ſome gentlemen of large landed property as their agents, who, "although eminent in their profeſſion, know little or nothing "about the proper management of land, and conſequently "are unfit to give advice to tenants; unfit to be woodmen, "and totally unfit to have the direction and management of "landed property reſpecting its cultivation." Mr. BRADBURNE, who is a conſiderable practical farmer, and upon his own land, ſays, "If one or more Societies (for the improvement of agriculture) were inſtituted in each county, the "members of ſuch Societies would be more communicative, "and a ſpirit of emulation might be excited." Mr. CURTIS thinks the greateſt obſtacles to the improvement of land are "poverty, and an averſion to innovation." Due encouragement from landlords in furniſhing materials for neceſſary reparations, and in not overwhelming a tenant with too heavy a rent, may be conſidered and ranked amongſt the principal incitements to improvement.

## TIMBER, PLANTATIONS, AND WOODLANDS.

THE county of Stafford ſtill continues well ſtocked with all kinds of timber, notwithſtanding the immenſe quantities that have been cut down of late years. Amongſt the many well-timbered eſtates, in the county, the following have been ſeen, and ſome of them particularly examined, by the Writer of this Report. Many well-timbered eſtates have undoubtedly been over-looked and are omitted; but the account of thoſe which follow is ſufficient to ſhew, that ſome attention has been, and is ſtill paid to this article by many gentlemen of diſtinction and property.

The firſt and beſt timbered eſtate, is that of LORD BAGOT in the neighbourhood of Abbot's-Bromley. The woods extend over many hundred acres, and almoſt wholly conſiſt of oak, the ripeſt, fineſt, and beſt that I ever ſaw; and I believe I run no riſk of exceeding the bounds of truth, if I ſay the beſt in the kingdom. A very large quantity of oak in theſe woods is now quite ripe, and ſome even decaying. Many of the oaks carry timber to the length of ſixty and ſeventy feet, and in LORD BAGOT'S Park are many hundreds of very extraordinary bulk, containing from two hundred to four hundred feet of timber each. I could pick out many worth ſixty guineas a-piece, and ſome even more. This timber is of conſiderable antiquity, and mentioned by Dr. PLOTT, as full-grown timber in 1686. I was informed upon the ſpot, that for theſe woods one hundred thouſand pounds have been offered, and that his Lordſhip has half as much timber in Denbighſhire. Total value of timber one hundred and fifty thouſand pounds, which in the three per Cents at the preſent price, would purchaſe an income for ever, of more than ſix thouſand guineas per annum. The ſucceſſion woods and young plantations are very conſiderable, and ſtill continuing;

nuing; and as Mr. HARVEY, his Lordſhip's ſteward, very judiciouſly obſerves, upon land not worth a rent of ten ſhillings per acre, paying better, underwood included, than in any other way: and it is upon a poor cold land of this deſcription, that the above fine timber chiefly abounds, the ſoil being a moiſt gravelly loam, upon a clay or marl bottom. The young plantations are made ſometimes by ſowing acorns, with wheat after ſummer fallow; and ſometimes by planting out young plants of oak, and other wood; in which caſe, at the end of one or two years, when ſuch plants have taken well to the ground, they are cut off at the ſurface, and the ſecond ſhoot truſted to for the tree; this ſecond ſhoot thriving with much more luxuriance and vigour than the firſt, checked by tranſplanting. Alſo after cutting down a wood, the replanting is ſometimes effected by ſtriking in with the pick-ax a ſufficient number of acorns and other ſeeds of Foreſt-trees or underwood. And all theſe methods have been attended with ſucceſs. The young plantations are all well fenced, and carefully guarded from treſpaſs by a woodman appointed for that purpoſe.

The ſecond timbered eſtate, in my opinion, is Chillington, the property of THOMAS GIFFARD, Eſq. whoſe hoſpitable and benevolent anceſtry and family have reſided here for many centuries. From this eſtate has been ſold within twenty years, timber to the amount of thirty thouſand pounds; and the timber remaining on the eſtate is worth at leaſt an equal ſum. The ſucceſſion woods and young plantations are here very extenſive, and of luxuriant and vigorous growth. Some very fine ripe oaks grow on the ſide of a gravel road, near the Pool, a large and beautiful piece of water. In the modern plantations, oak has been particularly attended to: but there are many other varieties of timber-trees extremely promiſing in growth. The young plantations are well fenced, and ſecured from treſpaſs, without which precaution planting would be in vain. This branch of agriculture, for I can call it by no other name, is peculiarly the province of the Gentleman; to whom I ſhould conceive nothing can give a greater or more rational pleaſure, than viewing the progreſs to maturity of theſe, as it were, the work of his own hands, whilſt at the ſame time they improve his eſtate, and ſhelter and ornament the country.

Teddeſley Park, Sir EDWARD LITTLETON's. The houſe at Teddeſley is a commodious, modern-built, elegant manſion, commanding an extenſive view of a well-cultivated country, to the weſt, and of the hills and extenſive waſte of Cannock Heath to the eaſt. The timber and plantations on this eſtate are very conſiderable. Manſtey Wood is an extenſive coppice of fine ripe oak timber; beſides which there are many other coppices, dingles and clumps, of full-grown oak, aſh, and other timber. The ſpring coppices and young plantations of different growths, as by information from Mr. HALL, the ſteward, cover at leaſt one hundred acres; and in them the oak has been an object of particular attention. It is further to be obſerved, that theſe plantations are generally upon poor cold land; on a gravelly marl or clay bottom, on which the oak will ſucceed well; and which ſort of land being of no great value for corn or paſture, is very properly applied to the growth of timber and underwood.

Wrotteſley Eſtate, the property of Sir JOHN WROTTESLEY, Bart. contains ſome conſiderable woods of ripe, well-grown timber. Alſo extenſive plantations of more modern growth. At Enville (LORD STAMFORD's), the woods and plantations within the circumference of the pleaſure-grounds are very extenſive, and extremely well-ſtocked with timber-trees, and underwood of every ſort; amongſt which the oak predominates in great profuſion, kindly, and of vigorous growth. The woods of Upper Areley are very extenſive, and well ſtocked with oak of various ages, from large timber-trees to ſaplings. Hagley-Park is out of the county, but cloſe to the borders, adjoining the pariſh of Clent. I ſhall juſt obſerve, that it contains large quantities of exceeding fine ripe timber, of the better ſorts, and of a firſt-rate quality. Some of the oaks are of great length and dimenſions, and fit for any uſe to which oak is applicable. The pariſh of Harbourne is well wooded. The Biſhop's woods in the neighbourhood of Eccleſhall are very extenſive, and ſaid to contain one thouſand three hundred acres: they are managed in a ſyſtem, the exact particulars of which I could not learn; but underſtand that a portion is cut down every year, and when the one thouſand three hundred acres have been ſucceſſively taken, that which was cut firſt, is ready for cutting in a ſecond rotation. A regular annual revenue is thus drawn from the woods without injury. Madeley Woods, near Newcaſtle, well ſtocked with oaks of different ages, were formerly a park, but "Ceres has "reaſſumed the land," and the breaks and lawns between the woods are incloſed, and in the uſual courſe of arable cultivation.

The plantations at Fiſherwick (LORD DONEGAL's) are of little more than twenty years growth, but very promiſing. BROWN, who projected theſe plantations, aſſured the proprietor, as I have been told, that he had planted for him one hundred thouſand trees, and in a certain number of years, which he then mentioned, thoſe trees would be worth one hundred thouſand pounds. There is a poſſibility, that this prediction may be verified in the time of the preſent, who was alſo the then proprietor. Some of the oaks are even now worth fifteen ſhillings each, and they abound in profuſion amongſt firs and other ſorts by which they are ſheltered, and encouraged in growth. I obſerved ſome large ripe oaks in the park; and in the pleaſure-grounds an aſh, which I believe contains at leaſt four hundred feet of timber.

Broughton pleaſure-grounds, or paddock (Sir THOMAS BROUGHTON's), abounds with plantations, clumps, and ſhady ſpreading trees, particularly ſycamores. On the other ſide of the road is a fine promiſing ſpring coppice of oak; the gradual thinning of which, by cutting out underlings, ſhould be attended to.

Hilton Park, belonging to Mr. VERNON, contains plenty of flouriſhing oaks; and in the pleaſure-grounds are ſome very fine ripe well-grown trees of this ſpecies, the pride of the foreſt: and a great variety of other timber-trees grow there in the utmoſt luxuriance. The rides and plantations are very extenſive, and furniſhed in the moſt innumerable profuſion, with evidence of the planter's vigilant attention. Mr. VERNON was a very early planter, and now, in the prime of life, has the pleaſure of ſeeing ſome of his firſt efforts in this way faſt approaching towards maturity. Many of the larches, and Scotch as well as other firs of his planting, contain twenty feet or more of timber, and are now in a very growing ſtate.

Burntwood, near Aſhley Common, belonging to Mr. MEYNELL, ſeems well-ſtocked with young plants of oak, and is very extenſive.

The eſtates of Mr. GOUGH at Perry Bar, Oldfallings, near Buſhbury, and Walton Grange, near Gnoſhall, are all well timbered. Perry Park and neighbourhood has a good deal of ripe timber; conſiderable young plantations and trees of every progreſſive ſtage of growth. Oldfallings eſtate and neighbourhood is plentifully ſtocked with well-grown oak and other ſorts of timber, and Walton Grange has an excellent oak coppice of conſiderable extent. Bentley eſtate, near Walſall, is extremely full of oak, both in coppices and hedgerows : the proprietor is Mr. ANSON. At Sugnall, near Stafford, I obſerved ſome ſmall neat plantations, amongſt which oak has not been forgotten. As this valuable tree ſucceeds well amongſt others by which it is ſheltered and encouraged in growth, but is liable to be over-topped by many others, which, more luxuriant, prevent its leading ſhoots from penetrating thro' their foliage; ſuch obſtruction ſhould annually be cut away, and the growth of oak encouraged as ſuperior to all others, both in majeſtic beauty and national conſequence. I obſerved this attention neglected in ſome of theſe plantations. Conſiderable woods and plantations grow on the Shutborough eſtate, (Mr. ANSON's), as well as on that of Sir WILLIAM WOLSELEY's; and alſo upon Mr. CURZON's, near Rudgeley. The eſtate of Mr. FOWLER in this neighbourhood at Pendeford, is well-wooded, both in hedgerows, young plantations, ſingle trees, and clumps of very fine well-grown oak: it has alſo a very promiſing coppice of oak. Other ſmaller eſtates in this neighbourhood are well ſtocked with timber, particularly that of Mr. FLEEMING at the Wergs near Tettenhall, where, amongſt a number of well-grown trees of various ſpecies, I could pick out a few oaks worth thirty guineas a-piece. Upon the whole, the county is well-timbered, and has now in it ſucceſſion growths ſufficient for the ſupply of a great length of time ; and I have no doubt but the public ſpirit of the times will ſecure that ſupply to future ages.

I have two more obſervations to make on planting : the one relating to the proper ſcite of ground and ſituation of plantations, whether intended for ornament or profit : the other on the timber beſt adapted to fulfil thoſe objects, and at the ſame time to anſwer the purpoſes of pleaſure and profit to the planter, and of utility to the public.

With regard to the proper ground for plantations, every gentleman or land proprietor of prudence and taſte, who reſides on his property, will furniſh himſelf with a ſhady retreat from the burning ſun, that ſhall afford at the ſame time a ſhelter from the ſtorms of winter. For this purpoſe he will keep up a ſufficient ſhade near his habitation, in that ſituation which local circumſtances ſhall direct. Large plantations or coppices for profit ſhould not be made on good land; always of much more value for corn or paſturage; but either on moiſt land of ſmall value, upon a clay or marl bottom, where timber often grows well; or rather, where ſuch land abounds, upon precipices, and ſides of hills impracticable to the plough; and where it often happens the land unplanted is of little or no value. I have often obſerved, that timber ſucceeds particularly well in ſuch ſituations; and the making plantations there is attended with many advantages. 1. The roots of trees twining and interweaving with the ſoil, prevent it being waſhed by torrents into the vallies, which is the cauſe why many ſuch ſituations are now bare and almoſt void of ſoil. 2. The falling and putrefaction of leaves tends to thicken ſuch ſoil, and render it by degrees richer and more capable of forcing the growth of timber. 3. Such land is often of little value, and incapable of being improved in any other way. And I cannot refrain upon every occaſion, from calling particularly upon all public and patriotic Societies to confine their premiums for planting, to land of ſmall value, or impracticable to the plough. The corners of fields, where four unite, are not improper places for ſmall clumps in any land: and in hedge-rows a few oaks, elm, or beech, are a great ornament, without doing an injury: but aſh, always very injurious to arable and paſture land, ſhould by no means be planted in hedges, but reſerved for clumps and coppices.

Reſpecting the ſorts of wood, oak is undoubtedly the firſt foreſt tree, but being ſlow of growth, the planter can ſeldom expect perſonally to reap the reward of his labour: it ſhould, however, be always plentifully intermixed with other ſorts, where it will be ready to ſupply their place, and fill up the ground when its inferior neighbours ſhall be cut away. I think, without a mixture of oak, no plantation can be approved.

Aſh is an extremely uſeful and valuable wood for many purpoſes, but not very quick of growth; requiring from fifty or ſixty to eighty years, to arrive at tolerable maturity. Elm, the common or narrow-leaved is very proper for hedgerows and plantations; it makes a large tree, in about the ſame time as aſh. I have had ſome well-atteſted inſtances of very fine large elms having grown up in the life of a perſon, who remembered them planted. We have now in this pariſh, a fine ſquare grove of elm upon Tettenhall Green, of about ſeventy years growth: the trees contain ſeventy or eighty feet of timber each. The witch elm has been known in ſeveral inſtances to grow amazingly quick: my Father was preſent at the planting of one in the paddock here at Pendeford, which being cut down at the end of thirty years contained ſixty feet of timber, and was ſold at one ſhilling per foot; and I obſerved a moſt rapid growth in ſome upon this farm: the wood is of a good value, and this ſort is equal to moſt in quick return to the planter. Reſpecting the fir tribe, planters have certainly been rather too partial here, tho' many of them are of rapid growth. The larch, the Scotch, and other firs, will often meaſure as many feet of timber as they number years of growth, or even more. I cannot but ſtrongly wiſh, however, that every gentleman making a plantation of firs would intermix at leaſt an equal number of Engliſh foreſt trees, and not forget oak. As ſuch plantation proceeds in growth, the trees leaſt profitable may be cut away. Beech and ſycamore are uſeful, and of tolerably quick growth, and are therefore a proper mixture with other wood. Many inſtances may be produced of the rapid growth of poplar, and the ſame individual has been known to plant and cut down poplars containing from ſixty to eighty feet of timber each: and I remember the planting of ſome myſelf rather more than thirty years ſince, ſome of which now contain more than thirty feet of timber; the ſort, the black poplar *(populus nigra)*. This ſort ſucceeds beſt on a moiſt ſoil, or by a brook ſide. The trees of this ſort are apt in ſome ſeaſons to die in great numbers, even when large trees. The white poplar, or abele (*populus alba*), makes a fine large tree, and will ſucceed on almoſt any ſoil. I have ſeen very large ones on the top of a high bank, and was ſhewn ſome in the plantations at Chillington lately of about twenty years growth. They are upwards of thirty feet high, and would meaſure four feet round at the bottom. The Lombardy poplar, ſo highly extolled ſome years back, is a mere weed in compariſon of our own native trees before-named, and little ſuperior to the aſpen, the worſt of the ſpecies. The Lombardy poplar in this country is a pole rather beautiful to the eye, but of no promiſe as a timber-tree. The wood of the poplar in general makes very good flooring-boards and packing-caſes. Some of the willow ſpecies are remarkable for quick growth; and the loppings in the hop countries are uſeful for poles. Amongſt plantations, perhaps, that of fruit-trees has been too much neglected: and the raiſing of orchards in this country may be ranked with its agricultural improvements, as producing an uſeful article, little interfering with its preſent productions.

In the foregoing account of woods and plantations, it is very poſſible that many conſiderable ones may have been omitted, as not coming under the Writer's obſervation.

## MISCELLANEOUS REMARKS AND OBSERVATIONS, MADE IN A TOUR THROUGH THE COUNTY IN THE SPRING OF THE YEAR 1794, NOT INCLUDED IN THE AFOREMENTIONED ARTICLES.

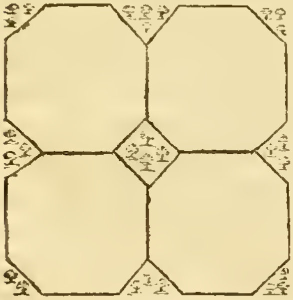
CALLED at Fiſherwick, the noble Seat of the Marquis of DONEGALL, on the weſt Bank of the Tame.

Here the genius of a BROWN, aided and ſeconded by the munificence of the noble owner, have conſpired to render a dreary moraſs one of the moſt delightful ſpots in nature, and have in a great meaſure ſucceeded: which ſucceſs is ſtill further heightening by the improvements of Mr. ELKINGTON, in the interception of ſprings, and the diſcharging of ſtagnant water. The houſe and offices here are nobly magnificent, and the hoſpitality within correſpondent. The ſhrubberies and plantations are not an exact copy of nature, but that improvement and embelliſhment of nature itſelf, which was reſerved for human art, ingenuity, and induſtry. A ſmall brook from Freeford, which here falls into the Tame, aſſumes through art the grandeur of a noble river; and even exceeds in appearance this river, except indeed when the Tame after a profuſion of rain, overflowing its banks, appears like an immenſe lake. The demeſne at Fiſherwick conſiſts of nearly a ſquare mile, or about ſix hundred acres. The paſture part of it is ſtocked with deer to the amount of three hundred couple, or more;

alſo with horſes, cows, and ſheep. A conſiderable part is mown for hay, and the mown land kept in good heart by the overflowing of the Tame.

The cows here are very good, of the long-horned breed, thick and heavy in the carcaſs. The ſheep are of different breeds; Leiceſter, Wiltſhire, South Down, Cannock Heath, and croſſes from theſe. The South Down wethers had been killed with much profit, as the ſteward informed me. A few South Down ewes ſtill remain: they are a thick ſquare ſmall ſheep, to which the natives of our own commons, where they are bred with attention, bear a great ſimilitude. But no reſpectable farmer here, with an incloſed farm devoid of common right, would think them good enough for his incloſed paſturage, unleſs as annual ſtock.

I am obliged to the Rev. Dr. FALCONER for his remarks on ſome of the pariſhes in this neighbourhood, which made my own examination of them leſs neceſſary. His remarks extend to Fiſherwick, Whittington, Tamhorn, Elford, Wigginton, Heſelor, Thorp, Conſtantine, Clifton Campville, Harenton, Harleſton, Statfold, and Scierſcott. In this tract of country, the banks of the Tame are good meadow land. The upland in Fiſherwick, Whittington, Tamhorn and Statfold, rather inclines to a light or gravelly ſoil. The other pariſhes or lordſhips are a ſtrong or mixt loam: the courſes of crops are the ſame as mentioned under that article. Some conſiderable dairies are kept, and cheeſe is the main object of ſuch dairies. The ſheep are pretty generally of the Leiceſterſhire breed. The country is wholly incloſed, except two commons or waſtes, which are Whittington Heath, conſiſting nearly of ſix hundred acres, where Lichfield races are held. It is now a good ſheep walk, and would, if incloſed and cultivated, be ſome of the beſt turnip and barley land in the county. The other common is at Clifton Campville, now a good ſheep-walk: it contains about four hundred and fifty acres. The incloſing of it is in contemplation. This country is in many places ſubject to wall-ſprings, which are cured by underdraining. Very little timber grows in theſe pariſhes, except at Fiſherwick and Tamhorn-Park, which latter, though a woodland, is more productive of rabbits than timber. The roads in theſe diſtricts are generally good. The cows at Tamhorn are ſubject to the foul water. Dr. FALCONER concludes his remarks with obſerving, “ that labourers “ wages have lately advanced ſo much in this neighbourhood, “ that it is not eaſy to aſcertain the average price: female “ ſervants, in particular, can hardly be hired at any price. “ It is attributed to the employing ſo many women in the “ different cotton-mills lately erected. Some regulation re- “ ſpecting the wages of ſervants employed in huſbandry “ would be of univerſal uſe.” Reſpecting timber and planting, the Doctor ſubmits the following plan to the conſideration of the Board: “ That in every Act for an incloſure, “ a clauſe ſhould oblige the proprietor of the new incloſed “ land to plant a certain number of oaks in proportion “ to his ſhare of the incloſure, and ſhould direct the “ plantations to be made in the “ angles of the fields, agreeable “ to the annexed ſketch: by “ adopting which plan, a leſs “ quantity of poſts and rails “ would be required, and the an- “ gles of each field would be con- “ verted to a profitable uſe, and “ corn would grow cloſe up to the “ rails: whereas no corn will now grow in ſuch angles. This “ is not the only advantage that would ariſe from this plan: “ the trees full grown, would afford good ſhade for cattle, and



“ an eaſy communication through theſe plantations would be “ found from field to field. It would alſo be very ornamental “ to the country.”

The ſtock of cows in this diſtrict are generally long-horned, and of ſuperior quality. Conſiderable tracts of excellent meadow-land, ſubject however to floods, are found on the ſide of the Tame. On the Trent alſo, we find excellent meadows; the hay-meadow at Burton, which is a kind of public property, would be worth many guineas per acre, if rented. Burton is a conſiderable town, both of trade and manufacture.

Tutbury is a pleaſant little town, containing nearly one thouſand inhabitants, with a lately eſtabliſhed cotton-work upon a conſiderable ſcale: it does alſo ſome buſineſs in the wool-combing branch. Tutbury-Caſtle, now in ruins, ſtands on a lofty eminence, ſtupendouſly overhanging the Dove, the meandering of whoſe waters, and the range of fertile meadows on whoſe banks, may from hence be traced to a great diſtance either way, up or down. This eminence, abruptly formed by nature, has been rendered leſs eaſily acceſſible by the defenſive military arts of former times. It is compoſed of an immenſe heap of marl. The ruins of the building are principally of hewn free-ſtone, with admixtures of gypſum; it has apparently been battered from a hill on the contrary ſide of the town. The property is in LORD VERNON of Sudbury, in this neighbourhood. Here is a draw-well of good water, but of conſiderable depth; low enough, I ſuppoſe, to be ſupplied from the Dove. On the declivity of the caſtle-bank, on the weſt-ſide, I obſerved the following remarkable plants.

1. Dwarf elder, (*ſambucus ebulus*), in great plenty.

2. Wild teaſel, (*dipſacus ſylveſtris*), in conſiderable quantity.

3. Wild woad, or Dyer's weed, (*reſeda luteola)*, a few ſpecimens.

Having often obſerved the firſt and third of theſe plants in ſimilar ſituations about the ruins of old caſtles, I am led to conjecture, that they have been formerly cultivated in theſe places for ſome uſe.

The fertile meadows on the banks of the Dove are an object conſiderably intereſting. This river, which, in the firſt part of its courſe, ſeparates for many miles the counties of Stafford and Derby, riſes from ſprings under the lime-ſtone hills of the Moorlands and the Peak; and at times receives an amazing addition from torrents ruſhing down thoſe hills, after heavy rains or the melting of ſnow. Its channel has a great declivity, and in many places this river comes tumbling over the rocks in caſcades; and in its greateſt ſwell puſhes on with great rapidity, which continues to below Roceſter, where the water has a greyiſh caſt, apparent to the eye, from its being impregnated with calcareous earth, to which undoubtedly may be attributed the extraordinary fertility of its banks. For after receiving the Churnet, a conſiderable ſtream from a part of the Moorlands, not abounding with lime-ſtone, its water becomes diluted; and although its banks ſtill continue excellent, yet they viſibly decline in richneſs, and the extraordinary fertility ceaſes. Immenſe quantities of lime-ſtone are found both on the banks and in the channel of the Dove, in the firſt part of its courſe: this lime-ſtone has fallen in length of time from precipices, which over-hang the river. The fertility of land on the upper parts of this river, about and above Roceſter, is, and always has been proverbial, " as rich as Dove;" being an epithet applied to any ſpot highly forced. This land has a perpetual verdure, and the ſpring-floods of this river are very gratifying to the land-occupiers, who have this proverb, "In April "Dove's flood is worth a King's good." It is alſo ſaid of Dove-banks in ſpring, that a ſtick laid down there over-night ſhall not be found next morning for graſs. It is very certain this river fertilizes its banks like another Nile; but ſometimes riſes ſo high in twelve hours as to carry off ſheep and cattle, to the great alarm of the inhabitants, and in as few hours abates and returns again within its own channel. Below Roceſter, where this river receives the Churnet, the plain ſpreads very wide, and continues ſo with variations to below Uttoxeter: the plain here on either ſide the river is compoſed of deep rich mellow loam, impregnated with, if not wholly formed of a rich ſediment of mud and calcareous earth. The herbage is very fine, without any mixture of ruſhes or aquatic plants. The graſſes are of the common ſorts: but the foxtail, the vernal-graſs, the *poa's*, the dog's-tail, and the meadow *bromus's* predominate. It contains alſo rib-graſs, meadow and white clover, upright crowfoot, and the common herbage of other meadows: not without a mixture of the curſed or common thiſtle, or ſaw-wort, (*ſerratula arvenſis*), ſo common in every ſoil and country. The plain within reach of the floods of Dove, extends in ſome places to near a mile in breadth, particularly oppoſite Uttoxeter, and amounts to ſeveral thouſand acres, almoſt entirely paſtured with cows, ſheep, and ſome horſes; very little of it being mown for hay. The uncertainty and ſuddenneſs of the floods make the riſk of hay too great. The rent of the Dove land generally riſes to near forty ſhillings per acre; and I was informed by an eminent grazier on the ſpot, that were it not for the inconvenience of floods, the land equally rich as at preſent, would be worth ten ſhillings per acre more, even for grazing: as it ſometimes requires a ſharp look-out to preſerve the ſtock from drowning, even when there has been little or no rain on the ſpot. A ſudden rain or melting of the ſnow on the Moorland or Peak hills is ſufficient to inundate large breadths of land near this river: as the declivity or fall is great, the ſwell of water is ſudden, but ſoon over, and the largeſt floods continue but a few hours. It is to be remembered, however, that the extraordinary fertility of theſe lands is owing to this circumſtance, however complained of as an inconvenience.

The moſt remarkable wild or native plants, that I noticed growing near the Dove, were,

1. Wild rape (*braſſica napus*); as luxuriant as any I ever ſaw cultivated.
2. Tanſy (*tanacetum vulgaris*).
3. Water muſtard (*eriſymum barbarea*).
4. Butterburr (*tuſſilago petaſites*).
5. Jack by the hedge (*eriſymum alliaria*).
6. Hemlock (*conium maculatum*).
7. Figwort, or water betony (*ſcrophularia aquatica*).

## SOME PARTICULARS OF THAT PART OF STAFFORDSHIRE CALLED MOORLANDS, NOT INCLUDED IN THE FOREGOING ACCOUNT.

THE North part of Staffordſhire, called Moorlands, is ſituate to the North of a line conceived to be drawn from Uttoxeter to Newcaſtle under Line. The face of this part of the county is various, but in general hilly, with large tracts of the land waſte, or uncultivated. The firſt market-town from Ut-

Uttoxeter is Cheadle, ſituate in a pleaſant vale of good mixed ſoil, but ſurrounded by rude and barren hills: thoſe hills are compoſed of huge heaps of ſterile gravel, that on the weſt ſide overhang the town. The principal herbage on this hill conſiſts of broom, heath, whortleberries, mountain cinquefoil; all beggarly and of diminutive growth: alſo of milk-wort, the mountain *carex's*, matt-graſs, *ciſtus's*, and knap-weeds. The hills north and weſt of the town, in the pariſhes or liberties of Cheadle, Tean, and Dilhorne, are of the ſame material, upon an underſtratum of ſand or ſandy rock: the herbage the ſame as before, but pitiful and beggarly: amongſt which heath (*erica vulgaris*) is generally moſt predominant. Theſe barren waſtes are pretty extenſive, and not worth, I think, one ſhilling per acre as paſturage for ſheep, or any other animal: they are, I fear, generally too poor and beggarly to be reclaimable by cultivation for the purpoſes of corn or paſturage. I cannot, however, help entertaining a ſtrong idea that they might be converted into coppices and plantations of timber and underwood: the Scotch and other firs and ſycamore would probably ſucceed. This laſt is now become a valuable wood, being worth from eighteen pence to two ſhillings per foot, at Birmingham, and has, I underſtand, ſucceeded well in ſome very expoſed and barren ſituations. Perhaps, many other of our native timber-trees might ſucceed, intermixed with theſe, as one would ſhelter and ſcreen another. To give any ſuch plantation a fair chance of ſucceſs, I ſhould propoſe to begin not on the ſummits, but on the declivity of the hills: and as ſuch firſt plantations increaſed in growth, to proceed with freſh ones nearer the ſummit, till the whole ſhould be covered: by which management the plants of ſtrength and growth would be made to protect and ſhelter thoſe of tender age. The putrefaction and rotting of leaves from ſuch plantations would increaſe and enrich the ſurface ſoil; and as they came to maturity, the woodlands, upon plain and practicable ground, might be cleared and converted into arable and paſture land. If ſuch ſcheme be practicable, which I think it certainly is by judicious management and perſeverance, theſe dreary barren hills, which now convey an idea of nothing but poverty, want, and miſery, would not only ornament and beautify the country, but, by furniſhing it with timber and wood, would anſwer the purpoſes of more valuable land, and enable an equal breadth of plain woodland to be converted to paſture and arable, without rendering the ſupply of theſe neceſſary articles uncertain or precarious.

The commons or waſtes between Cheadle and Oak-Moor, called Hay-ſhutt, Ranger, and Aulton Common, conſiſt of an immenſe number of rude heaps of gravel upon an under-ſtratum of ſoft ſandy rock, thrown together without order or form, or rather into every form that can be conceived, into ſudden ſwells and deep glens, with ſcarcely a level perch: the mind, endeavouring to account for their formation, muſt conceive it owing either to ſome violent convulſion of nature, or ſome ſtrange confuſion of matter. This tract, impracticable to the plough, now rough, barren, and bare, might be improved into woodland and plantations, and ſome open ſpots of the moſt favourable aſpects might be reſerved for gardens to cottage tenements, and cultivated with the ſpade and hoe. Above Oak-Moor, to the north-eaſt, I had the pleaſure of ſeeing the idea before ſtated of planting precipices executed. A plantation has been made there on a declivity as barren, rocky, and bare of ſoil as any before deſcribed. This plantation ſeems about twenty years old, is in a thriving ſtate, and contains the following ſorts, viz. Scotch fir, ſpruce, oak, lime, birch, ſallow, and mountain aſh. This is the higheſt improvement to which the ſides of barren precipices can poſſibly be brought by human induſtry;

and

and I think that all our public and patriotic Societies who offer premiums for planting, ſhould confine ſuch premiums to grounds impracticable to the plough, or of ſmall value, not exceeding *per* acre a ſmall ſpecified ſum. I conſider extenſive plantations upon rich level, arable, or paſture land as a public nuiſance and national evil, at leaſt ſo long as there are large tracts of the above deſcription remaining unoccupied.

A little north of Oak-Moor the lime-ſtone country begins, and extends over a great breadth of country to the north, eaſt, and weſt, in many places riſing out of the main ſurface in huge cliffs. The Weaver Hills are of conſiderable extent. They are compoſed of immenſe heaps of lime-ſtone, which I was much pleaſed to find covered with a rich calcareous loamy earth, capable of being improved into very good arable or paſture land. They are incloſed in large tracts by ſtone walls, but not ſubdivided, and large breadths have never undergone the leaſt improvement; which I much lament, as the neighbouring lands which have been improved are covered with an excellent fine turf, and bear good crops of grain. Theſe hills are a very elevated ſituation, overlooking, or at leaſt as high as any of the Moorland or Derbyſhire Peak hills, which may be ſeen from their ſummits. I believe them to be from one to two hundred yards perpendicularly higher than any of our hills in the ſouth of the county: the fall even from the foot of theſe hills to the higheſt parts of the Dove or the Churnet is very great, and thoſe rivers are very rapid. On one of the ſummits of theſe hills, in a very red ſoil, I found growing indigenous my old friend, which I had long ſince cultivated, the upland burnet (*poterium ſanguiſorba*). This plant I have never before ſeen or heard of as a native of Staffordſhire; but it is very common in the calcareous ſoils of Rutland and Bedford, being

ing a very different plant to the meadow burnet (*ſanguiſorba officinalis*). The herbage of theſe hills contains many good plants, both graſſes and trifoliums, but the hills are much overrun with uneven lumps, which ſeem to be worn out or decayed ant-hills, covered with moſs or lichen; and though they are a tolerable ſheep-walk, I muſt conſider them as little better than waſte, and capable of a high degree of improvement by cultivation. Stanton-Moor, to the eaſt of theſe hills, is a conſiderable waſte on a lime-ſtone. The ſheep-ſtock of this country has been mentioned before.

Large quantities of lime are burnt upon Cauldon Low, and elſewhere in this neighbourhood, and there are marks of lime-kilns formerly on Weaver Hills. Lime is much uſed here as a manure, being ſometimes laid on ploughed ground, and at other times on turf, with very good effect in fining ſuch turf. It has been remarked, that after liming a coarſe turf white clover has been produced in abundance, where that plant had not been obſerved before. The lime-ſtone here is intermixed with a proportion of gypſum or alabaſter.

In a large tract of this country the fences are almoſt wholly ſtone walls. This practice I cannot but conſider as barbarous. Quickſet fences are much cheaper, better, more durable, vaſtly more beautiful and ornamental, and make the country and climate more temperate; for in winter the quickſet affords much better ſhelter againſt ſtorms of wind, rain, ſnow, or hail, to man or beaſt; and in ſummer, by its refreſhing ſhade, renders not only more bearable but pleaſant that ſolar heat which, under a ſtone wall, reflected into a focus as it were from a burning glaſs, is always inſupportable. The fanning breeze, the gentle zephyr, and thoſe other pretty fancies of the poets, are unknown, and becauſe never felt would never have been conceived here. I hope the owners and occupiers of land will have ſo much regard for their own intereſt and the ſymmetry and beauty of their country, as by degrees to do away this invention of barbarous ages, and a violence to nature, by planting quickſets, to which the ſtone walls would be a fence and ſhelter on one ſide. With the quickſet ſhould be planted in corners and proper places clumps of trees, and in the fences a few oak, elm, witch-elm, ſycamore, and other foreſt trees, but not aſh, which ſhould be in the clumps: theſe both afford ſhelter to cattle and ornament the country, as well as turn to the great advantage of the proprietor. When the quickſet fences ſhall have been reared, the lime-ſtone walls burnt may turn to good account as manure, and the grit-ſtone will be ready to repair the roads. This improvement, and ſome others before named, which I cannot but ſtrongly recommend, once completed, poſterity will wonder why the country was called Moorlands.

The Moorlands, in point of elevation, are far above anything we have in the ſouth part of the county, riſing perhaps at leaſt from 100 to 200 yards perpendicular above the general level of that country, hill above hill and plain above plain, on which heights large tracts of incloſed paſturage are ſituated. This elevation greatly increaſes the degree of cold, by combining the different cauſes that produce it, and by being more expoſed to the elements of air and water in every form and variety of wind, hail, ſnow, or rain. The air here, conſiderably more rarified, is leſs capable of retaining the ſolar rays; the country is almoſt in a ſtate of nature; it has no cloathing nor ſhelter except the ſtone walls, which have no effect whatever againſt the cold. Such a ſyſtem of incloſure is completely barbarous. Plants, as well as animals, in this climate require ſhelter and cloathing, or muſt be ſtarved and limited in their growth. I am firmly perſuaded that the calcareous part of the Moorlands, after quickſet incloſures, and a ſufficient number of plantations on the precipices and ſummits, ſhall have acquired ſome maturity, may be improved into one of the fineſt tracts of land in the county. The calcareous part of the Moorlands, or that on a lime-ſtone bottom, is pretty extenſive, reaching in length from the Weaver Hills to Longnor, and in breadth from the Dove to Morredge, including fifteen or ſixteen pariſhes and fifty or ſixty ſquare miles. The quantity of lime-ſtone here is inexhauſtible, being in many places in ſtrata of immenſe thickneſs. This is the beſt part of the Moorlands, and the ſoil ſeems to have a natural aptitude for producing a fine herbage of graſs; and to the credit of the people here I muſt obſerve, that their breed of cows of the long-horned kind are generally ſuperior to thoſe in the ſouth of the county, where the land has been longer in an improved ſtate. I attribute this to the plough and to the growth of corn, the chief conſideration in the latter diviſion, while ſtock here has been the principal object. But this general rule, like moſt others, muſt be admitted with ſome exceptions.

Not far from Okeover I obſerved a practice well worthy, perhaps, of imitation in other places, of waſhing young quickſet hedges with lime-water to prevent their being browſed on by cattle.

Cabbages for cattle are planted in the fields near Okeover, and the ground is well prepared. The extent of meadow-land on the Dove is here much narrower than lower down. In a meadow where the water has been ſuffered to ſtagnate too much, a large quantity of the *polygonum amphibium* grows. The plantations at Okeover are flouriſhing with a due proportion of oak. The houſe and offices are neat, pleaſantly ſituated in a paddock of excellent fine turf, commanding a view of the Dove and its banks, with a neat gothic church at the very door. The paddock is well ſtocked with deer. At Ilam is a pleaſant ſeat, the property of Mr. PORT, but occupied by Mr. CLIVE. The romantic ſituation of this place ſuggeſts the idea of a glen in the Alps. Here two conſiderable rivers, the Hants and Manyfold, burſt from under the lime-ſtone hills, after a ſubterraneous paſſage of ſeveral miles, in ſeparate ſtreams, which has been proved by throwing corks into the ſtreams above. The precipices which ſurround the valley in which Ilam ſtands, are well cloathed with oak and other wood; and the pleaſure-walks from the ſeat on one of theſe precipices are wonderfully romantic and various. Theſe pleaſure-walks reſemble ſhelves, one almoſt perpendicularly above another; by the ſide of which Nature, with ſcarcely any aſſiſtance from Art, has furniſhed a profuſion of flowers of no contemptible appearance; amongſt others, native geraniums of ſorts, particularly the *Robertianum*, alſo the *centaurea ſcabioſa*, and many other ſhowy natives whoſe names, for want of minutes on the ſpot, I have forgot. In a meadow over the water the ramſon (*allium urſinum*), a very ſhowy flower, but no very deſirable paſture plant, flouriſhes in profuſion. The ſubterraneous rivers here are very conſiderable, at leaſt equalling the Dove. In a lime-ſtone grotto, and elſewhere, there are ſeveral ſpecimens of petrified fiſh, ſome of them apparently in the ſpot riveted by nature, others brought from elſewhere: ſome of them of the carp or barbel kind, ſeem to have weighed when alive two or three pounds each. In a grotto here, CONGREVE is ſaid to have compoſed ſome of his plays; and indeed the ſituation is very advantageous for compoſing: the ſhady bower above, the murmuring ſtream below, the recluſe and retired ſituation, without the reach or hearing of noiſy intruders, all conſpire to fix the mind upon its individual object, and enable it to ſend forth an effuſion of its collected powers.

The ſubterraneous rivers, after burſting up here, form two very fine caſcades. From theſe pleaſure-grounds we view a very bold and romantic proſpect of two hills, called Thorp Cloud and Bunſter, on either ſide the Dove: the latter, in Staffordſhire, is an immenſe heap of lime-ſtone, but covered with a light earth, and well ſtocked with rabbits. Between theſe two hills the Dove falls in abrupt caſcades, but is not in any degree ſuperior to the ſubterraneous waters before named. Here are large quantities of lime-ſtone fallen from the over-hanging precipices. The higheſt ſummit of Bunſter I eſtimate at 300 yards perpendicular above the Dove, and the fall of Dove from hence to Trent 100 yards more. The ſides of theſe immenſe precipices of Bunſter have a ſcattering of wood, which I doubt not might be eaſily increaſed in any deſired proportion. The ſorts are principally maple, elder, hazel, and hawthorn. The remarkable plants on this mountain are ſedums, geraniums, veronica's, hypericums, and a ſavoury ſweet-ſmelling mint; alſo a very rank *galeopſis* in ſome places; alſo on ſome of the ſummits, in great plenty, the mountain ſtichwort, and a very diminutive *galium* amongſt nettles, and a rank moſs. The ridge of this mountain terminates, in ſome places, in a number of conical ſugar-loaf hills of bare lime-ſtone. This hill, though of great elevation, is not nearly equal to the Weaver, nor ſo high as ſome of the Peak hills over the Dove.

To corroborate the juſtice of the idea of planting precipices, I had the pleaſure to find the ſtumps of ſome very large aſhes which have been ſawn down on the declivity of Bunſter, facing Ilam, ſitting on one of which of more than a yard diameter I make this memorandum, May 29, 1794; and I cannot but perſevere upon every occaſion in ſtrongly impreſſing and enforcing this idea, as the dreary aſpect of a great tract of this country is wholly owing to the neglect of the land-proprietors and occupiers in not raiſing quickſet fences and plantations on the declivities; and it is one of the greateſt abſurdities and neglects in agriculture that this bleak, elevated, and expoſed diviſion ſhould have remained ſo long, and ſhould ſtill continue, in a naked ſtate.

One circumſtance, however, in the farmers management here deſerves commendation. The land is naturally much more adapted to graſs than corn, the better ſorts of graſſes, and many of the trifoliums being produced ſpontaneouſly. To encourage their growth little more is wanted than to extirpate their enemies, the more luxuriant weeds, or the buſhes of furze and heath. Accident, or the diſcernment of the occupiers, has adapted their management to this circumſtance, and the much greater proportion of the land is paſture, ſtocked with cows and long-wooled ſheep: the paſturage would be much improved in many places by pulverization, and by ſowing clovers, trefoils, and hay-ſeeds. This is not in all places practicable, on account of the rocky ſurface, although large tracts incloſed with ſtone walls, but never yet cultivated, might be thus improved. The lime-ſtone under-ſtratum is generally covered with a calcareous loam of different qualities and depths. Where it is dry, friable, and ſufficiently deep, it is rich; and with its ſpontaneous herbage only it is admitted to be good feeding land, but ſolely, as they ſay, for three months in the year. This is accounted for from its naked ſtate and expoſed aſpect. It would undoubtedly give good crops of any grain. The thinner ſoils nearer the rock not having a furrow of ſoil, are good ſheep-walks, and are not ſubject to burn in any ſeaſon. The moiſter and more tenacious loam is the worſt of all, but might be improved by draining; but the ſtone fences do not even admit of ditches.

Mill Dale, near Alſtonefield, is a long, narrow vale or glen, of great depth. The ſides conſiſt of over-hanging precipices of lime-ſtone, eſtimated to be from 100 to 150 yards of perpendicular elevation, and ſo very ſteep, that they can be clambered up but in very few places. The width of this glen, vale, or dale, at the top, ſcarce exceeds the depth of its ſides: it ſeems formed by the burſting or breaking of the hill which compoſes its ſides, occaſioned by a want of ſolidity in its bearing. The vale of Manyfold is ſituated between Welion and Butterton, where the waters of the river Manyfold are abſorbed by the fiſſures under the lime-ſtone hills, and diſcharged again at Ilam, four miles below. The warmeſt imagination can ſcarcely conceive a ſpot more extravagantly romantic than ſome parts of this vale. Thyrſis's Cavern here is a conſiderable excavation, pretty high up the ſide of a lofty precipice: it has ſomewhat the appearance of the inſide of a Gothic church, and appears to me to be a work of art. Starlings alone are its preſent inhabitants. Near this place, by the road ſide, the upland burnet, *poterium ſanguiſorba*, grows ſpontaneouſly. At Exton, or Ecton, is a very conſiderable mine of copper and lead, the property of his Grace the DUKE of DEVONSHIRE; and there are other mines of the ſame metals in this diſtrict. The calcareous or lime-ſtone bottom ends at Morredge; and the underſtratum in the tract of country weſt of Leek and of this waſte, is generally ſandy or gravelly clay, or grit-ſtone rock. This part of the country, north of Mole Cop, is the worſt part of the Moorlands and of Staffordſhire, the ſurface of a conſiderable proportion of this land being too uneven for cultivation. Large tracts of waſte land here, though ſo elevated in point of ſituation, are meer high moors and [illegible]; and of this ſort are a great part of Morredge, Axedge, the Cloud Heath, High Foreſt, Leek Frith, and Mole Cop, though ranking amongſt the higheſt land in the county. The ſummits of ſome of the hills in this country terminate in huge tremendous cliffs, particularly thoſe called Leek Rocks or Roches, and Ipſtone's ſharp cliffs, which are compoſed of huge piles of rude and rugged rocks in very elevated ſituations; piled rock on rock in a moſt tremendous manner; aſtoniſhing and almoſt terrifying the paſſing traveller with their majeſtic frown. Here ſingle blocks, the ſize of church ſteeples, are heaped together; ſome overhanging the precipice and threatening deſtruction to all approachers, and ſome of prodigious bulk have evidently rolled from the ſummit and broke in pieces. Theſe ſtupendous piles, the work of Nature, are a ſublime lecture on humility to the human mind; ſtrongly marking the frivolity of all its even greateſt exertions, compared with the ſlighteſt touches of that Almighty hand which placed them here; in whoſe preſence all fleſh is as graſs, and the proudeſt productions of the higheſt efforts of human genius, are but as chaff. The ſpeculative mind, in endeavouring to account for their origin or formation by any known laws, agency, or operation of Nature, is loſt in amazement, and led to exclaim with the Egyptian Magicians, "this is the finger of God;" for the moſt ſuperficial obſerver may perceive that it is his work. Leek Rocks or Roches are compoſed of a coarſe ſandy grit rock; thoſe of Ipſtones have for their baſis gravel, or ſand and ſmall pebbles cemented together.

Upon Morredge and Axedge commons large quantities of peat are dug for fuel, and a number of labourers were digging it when I examined this country the beginning of June 1794. The peat moſſes on Morredge were generally three or four feet deep; the ſoil afterwards was a gravelly clay. The peat both here and on Axedge is porous as a ſpunge, and equally retentive of moiſture; ſo much ſo, that it was now, and I believe always is boggy, notwithſtanding its high ſituation and a dry ſeaſon, and yields ſo much water from preſſure that it furniſhes ſmall lakes in the hollows, rivulets down the declivities, and ſtarves the natural herbage around; ſo that ſcarcely any thing flouriſhes, or indeed grows, on or near theſe ſpots except heath (*erica*), and that ſtarved, whortleberries, the cottony ruſh or graſs (*eriophorom*), *carex's* and ruſhes. I can have no doubt but theſe high bogs may be eaſily drained: the fall is inſtantaneous, the cutting of drains eaſy, and ſtone in any quantity on or near the ſpot. Indeed another great obſtruction to the improvement of theſe lands is the immenſe quantities of ſtone lying on, or of rocks riſing out of, and above the ſurface. This would be ſomewhat leſſened by ſuch draining, as from the huge tremendous cliffs in which the hills above-named, and many others in this neighbourhood, terminate, immenſe fragments of broken ſtones have fallen in every direction. It is evident that theſe rocks in ſome early period have fallen in pieces, either by ſome violent convulſion of Nature, or more probably by an alteration in the earth's center of gravity, from ſome agency under the immediate will of the Almighty Creator. Theſe ſtone cliffs and fragments cover a conſiderable extent of land, particularly about Ipſtones, Wetley Rocks, Leek Roches, to the weſt of Flaſh, High Foreſt, the Cloud Heath, and Mole Cop common, with the waſte north of this laſt, and indeed in many other places. Here the warmeſt or moſt ſanguinary friend to agriculture can expect little more than ſheep walk or plantation; and I cannot but moſt ſtrongly and repeatedly call upon the land proprietors to attempt the latter, in which I have no doubt but a perſevering attention will be crowned with ſucceſs; and by which ſuch land will be brought to the higheſt ſtate of improvement poſſible.

It is, however, an encouragement to attempt other agricultural improvements in uncouth ſpots, when every attentive obſerver can remark, that ſome ſuch ſpots here, which have been levelled, cultivated, and improved, are now covered with a very good and fine herbage fit for paſture, and ſeem very gratefully to have anſwered or exceeded every expectation that could reaſonably have been formed by thoſe who attempted and executed ſuch improvement. There is in all the Moorland ſoil, whether upon a calcareous or grit bottom, a ſtaple, or a ſomething, which has a tendency to produce paſture; ſo much ſo, that the paſtures here, however thin the ſoil, or near the rock, never or ſcarcely ever burn or parch from drought. This upon the lime-ſtone bottom I ſhould have expected; but upon the grit bottom ſhould ſcarcely have believed, had I not in part ſeen, ſo far as the advance of the ſeaſon, by no means a moiſt one, permits me, and had I not farther been informed from good authority that ſymptoms of drought are here ſcarcely ever obſervable. Perhaps the climate or temperature of the atmoſphere on this high ground, naturally cool, may in ſome degree favour this tendency to ſummer verdure.

Oat bread is eaten very generally in the Moorlands, and none other kept in country-houſes; this, however, I cannot conſider as any criterion of poverty, or of a backward or unimproved ſtate, as I think it equally wholeſome, palateable, and nutritive with wheat bread, and little cheaper even here; for upon enquiry at Leek I found the oatmeal and wheat flour nearly the ſame price. For ſeveral days during my ſtay in this country I eat no other bread from choice, preferring it to wheat bread, and rather wonder it is not more general, and kept in London and elſewhere for ſuch palates as prefer it. In the remote country villages it is often baked thick, with ſour leaven, and a proportion of oat huſks: this, even when grown mouldy, is eaten by the natives without murmuring.

South of Mole Cop the country alters, and can no longer be termed Moorlands. Here a regularly incloſed country commences, with all the beauties of quickſet incloſure, ſhelter, and ſhade. The Potteries are of conſiderable extent and population, and very much a national object. The Trent and Merſey Canal, which paſſes through them, has been a very great convenience in the conveyance of heavy articles uſed in this manufacture; which circumſtance, united with the genius, ſpirit of enterprize, and exertion of the maſters and workmen, has happily ſucceeded in raiſing this manufacture in a very rapid manner, from ſmall beginnings, to its preſent importance and national conſequence. The great improvements introduced into this manufacture by Mr. WEDGWOOD and others, will be for ever an honour to their memory, and rank them among the benefactors of mankind. The cream-coloured ware has all the neatneſs and elegance of porcelain; is in very general uſe, and is wrought into a vaſt variety of forms for purpoſes both uſeful and ornamental. The raw material uſed in this buſineſs being of little or no value, the amount of value of the manufactured article, which is very conſiderable, and a great addition to the national capital, may be conſidered as wholly created by the induſtry of thoſe concerned and employed in this manufacture; by the ſucceſs of which, Burſlem and Hanley Green, from ſmall villages, have rapidly ſwelled into large market-towns, and are now equal in population to Newcaſtle and Leek; beſides which, the Pottery includes a number of populous villages ſcattered over this neighbourhood. Mr. WEDGWOOD is no inconſiderable planter. His ſeat and pleaſure-grounds at Etruria are laid out with neatneſs and elegance, and very much ornament the country.

The land here is in general cold, inclining to a ſtiff ſoil, which continues to near Leek, within a mile or two of which its quality improves. From Leek, three or four miles towards Aſhbourn, the land is very barren and rocky; yet about the church at Ipſtones, and from thence to Bellmont, it is much improved, and in many places is good paſture land. Ipſtones ſharp cliffs have been mentioned before; to the ſouth of which is Bellmont, the ſeat of EDWARD SNEYD, Eſq. pleaſantly ſituated on the weſtern declivity of a romantic glen, the ſlopes of which are well covered with oak and other wood, with a brook murmuring through the bottom into the Churnet. Mr. SNEYD's plantations are extenſive, and of all the different ſtages of growth from infancy to maturity, I had the pleaſure of obſerving ſome recent ones upon barren rocky land impracticable to the plough, where the young plants are healthy and promiſing. Had every gentleman who has landed property in the Moorlands improved his eſtate in this way in an equal degree with Mr. SNEYD, I ſhould have had little occaſion to have complained of the "nakedneſs of "the land" in ſo large a portion of this country.

*Rare Plants in Mr.* SNEYD's *Woods.*

1. Cow-graſs, or Cow-wheat (*melampyrum ſylvaticum*), recommended by WITHERING as an excellent cow herbage. I found the ſame plant ſince in the woods at Upper Areley, and hedge ſides, Walſall wood, and Brownhills.
2. Yellow pimpernel (*lyſimachia nemorum*).
3. Bearsfoot (*helleborus fœtidus.*)
4. Crimſon graſs vetch (*lathyrus niſſolia.*)
5. Spleenwort, (*aſplenium ſcolopendrium.*)
6. Angelica.

7. Golden ſaxifrage, *(chryſoſplenium alternatifolium)*; beſides many other curious plants in common with other places.

Mr. Sneyd informed me that the wintergreen (*pyrola*) is common in the neighbourhood.

Paſſed Trentham, the ſeat of the moſt Noble Marquis of Stafford. Here the hanging wood with its umbrageous foliage, the verdant lawn with its beautiful ſhady ſpreading trees and clumps, promiſcuouſly, as it were, diſpoſed in infinite variety; the ſpreading ſheets of water with their accompanyments of impervious ſhade, and loſt to the eye by their length and winding behind the ſwelling hill and ſhady copſe; have an effect truly magnificent and worthy of the noble owner: the houſe and offices are correſpondent. This place for the beauties of ſhade, water, and turf, united, has few equals and no ſuperior.

Near Newcaſtle are made large quantities of excellent blue tile, for covering buildings, which on account of their ſuperior quality in duration are ſent to a conſiderable diſtance.

From Talk on the Hill I proceeded through Audley and Balterley to Betley. The country is incloſed with quickſets, well planted, and the timber-trees are of luxuriant and flouriſhing growth. The ſoil in general is a mixt gravelly loam; the underſtratum is various; ſand, gravel, marl, or grit ſtone rock. The ſoil here, being the happy medium between the ſterility of ſand and the harſhneſs of clay, is adapted to either tillage or paſture. The meadow and grazing land is covered with a good herbage, and the corn crops have a promiſing appearance; and upon the whole this Diſtrict may be called a fine country.

Betley was formerly ranked amongſt the market-towns of the county, but has now loſt that honour, its market having declined. It is a neat little town, ornamented by two handſome

ſome ſeats; the one belonging to Mr. TOLLET, and the other to Mr. FLETCHER. There is a road through it from Newcaſtle to Nantwich and Cheſter.

Between Betley and Newcaſtle is a good deal of light land, light enough for turnips, and ſome few ſmall cloſes were under preparation for that vegetable; but I think in too ſmall a protion. South of the road leading from Betley to Newcaſtle, a ſtronger ſoil, or friable clayey or marly loam, commences and continues with ſome variations to Eccleſhall, and farther; the underſtrata being generally marl or rock, with ſome exceptions, principally on riſing ground, where the ſurface is often lighter, and the underſtrata are ſand, gravel, or ſandy rock. On waſte alſo, or uncultivated ground, as Maer Heath, Aſhley Common, &c. the ſurface is a thin black peat moor, and the underſtrata, eſpecially of the hilly parts, ſand, gravel, or ſandy rock. The herbage is poor, being generally heath, gorſe, whortleberries, *carex's*, and a ſmall proportion in patches of the graſſes. The ſoil mends and approaches more to a friable marl nearer Eccleſhall, where the upland is a rich deep red friable marly loam; excellent for wheat or any other grain. The meadows round the Biſhop's palace are alſo generally rich, though ſome patches have the appearance of being moraſſy, and ſeem to want draining.

The Biſhop's woods in the neighbourhood of Eccleſhall are very extenſive, and well ſtocked with timber and underwood. Since drawing up the accounts of the woodlands and plantations of the county I have received the following information reſpecting them from Mr. HARDING, who I believe has the management of them.

“ THE extent of the woods near Eccleſhall, including the “ Biſhop's woods and Burntwood, are, I believe, about one “ thouſand five hundred acres.

" The ſyſtem of managing them is variable. Some parts of "the Biſhop's woods are cut at fourteen years growth for " crate rods and heads for the potters uſe, others at ſeven years " growth for rods only. The timber trees are moſtly oak, and " left as near an equal diſtance as can be, from forty to eighty " on an acre. The ſoil being very poor in moſt parts of theſe " woods, the oaks are ſlow in growth. This ſoil is in general " of the gravel or grey ſandy kind, and would not be worth " more than eight ſhillings per acre if in cultivation. The " value to the owner is more in their preſent ſtate than if in " cultivation; the employment to the labourer of greater con- " ſequence, being in the winter ſeaſon; and the benefit to the " public much greater; for without a ſupply of wood from theſe " coppices the potters would experience a want of wood for " the purpoſe of making crates to pack their ware in.

" The beſt part of the wood, ſuch as willow, alder, birch, or " aſh that is clear, is made uſe of for the purpoſe of hay rakes, " ſcythe poles, mop ſtails, and other articles for the bruſh- " makers uſe. In the low parts of the woods, where the ſoil is " of a better nature, the underwood will pay fifteen ſhillings " per acre annually, if it is well ſtooled, and attention paid to " planting the ſpaces between the ſtools.

" Aſhley Heath, July 5, 1794. THOMAS HARDING."

Between Eccleſhall and Stafford, about a mile ſouth of the road, is Latford Pool. This Pool, quite neglected, and without being of the leaſt uſe, keeps back the water ſo as to render upwards of one hundred acres of land a perfect moraſs, incapable of producing any uſeful herbage; a large proportion of which moraſſy land is the property of the Chillington family. The draining is, I underſtand, in agitation, and ſhould by no means be neglected, as the land might be converted to uſeful meadow, and in its preſent ſtate is a national loſs.

The water and damaged land are, I underſtand, different properties. This accounts for the neglected ſtate of the land, which the owner has no means of draining without drawing down the Pool. The ſtrong marly upland, with ſome variations, continues from hence ſouthward as far as Blimhill and part of Breewood pariſh. The nature of ſoil in the midland part of the county is explained in the Map.

The ſouthern part of the county having ſome peculiarities, they are attempted to be delineated in the following ſhort remarks made on the particular ſpots, in a tour through that diviſion of the county.

*Rowley Regis.* This pariſh exhibits a very ſtriking ſingularity, being in itſelf diſtinct from any other diſtrict in the neighbourhood or in the county. It is principally compoſed of an inſulated mountain, ending or finiſhing in various peaks, pikes, or ſummits. The higheſt ſummit, called Turner's hill, is the higheſt ground in the ſouth of Staffordſhire, but much beneath the Moorland hills, or the Wrekin and Clay hills of Shropſhire. The other higheſt points of Rowley mountain are Oakham and Corney hills. This mountain has for its baſis a ſingular ſpecies of quartzoſe ſtone, devoid of any grit quality, called Rowley rag-ſtone; large quantities of which are carried to Birmingham and elſewhere for pavements and repairing roads. It is extremely hard, too much ſo to be hewn by a common tool; the colour is a ruſty blue. This ſtone is totally void of any calcareous quality, but very probably containing a ſmall proportion of iron. This ſtone lies in an infinite number of fragments, and ſome of them of immenſe bulk, both above, upon, and beneath the ſurface. The rock called Rowley hail-ſtone is of this quality, and of great ſize. DOCTOR PLOTT has moſt abſurdly expreſſed a doubt whether this may not have been a production of art. It is evidently the work of nature. The Rowley ſtone when dug for lies in no ſtrata, but in rude heaps in every direction, generally beneath the ſurface ſoil, but often riſing above it, with innumerable fragments both upon the lands and roads. The hills north of Rowley, near Dudley and Sedgeley, are compoſed of lime-ſtone; whilſt thoſe of Clent, to the ſouth, may be termed a ſtone braſh, or innumerable ſmall fragments of broken rock ſtone, intermixed with a red ſand or ſandy loam: whilſt Rowley, as it were inſulated, differs from both; the ſurface-ſoil a ſtrong marly loam, retentive of moiſture even in its elevated ſituation, and producing a good herbage of graſs. The roads of this pariſh are rocky precipices, and moſt of the heavy carriage done on the backs of horſes.

The *Hills of Clent* are, at and near their ſummits, compoſed of a light ſoil intermixed with ſmall broken fragments of rock. The lower ground is of a better ſtaple, as containing more of a marly or loamy quality. The ſtone braſh quality goes apparently to a great depth, rendering the ſoil porous, and paſſing the rains through quick, which renders this ſoil liable to burn in hot ſummers, except where the moiſture is retained by the marly loam abounding in the ſurface ſoil. A conſiderable part of theſe hills are nothing but ſheep walk, totally unimproved, but covered with a fine turfed herbage, intermixed with little rubbiſh, except here and there a furze or gorze buſh. Theſe hill ſummits are very high ground, nearly equalling thoſe of Rowley; they ſeem for the greateſt part capable of the turnip and barley culture. This part of the county has ſeveral extenſive commons. On one near the Stewponey I examined the herbage, and found it principally heath, fern, ſheeps feſcue, mattgraſs, white galium, and ſheep ſorrel.

*Kinver* is a light gravelly ſoil, on a grit rock bottom, of various quality, from fertility to ſterility. On Kinver Edge is an old extenſive military work or encampment, now occupied by ſheep. Kinver is ſtill in an unimproved ſtate; though incloſed and appropriated, but not ſubdivided. Of a conſiderable tract incloſed in this neighbourhood ſome years back, part is improved and part not, but ſome progreſs is making: the ſoil being ſterile, the improvement, to render it fertile, muſt be a work of time. Weſt of Kinver, and ſouth of Enville, the ſoil changes into a ſtrong clayey or marly loam, more or leſs harſh or friable, under which deſcription is included the whole of Over-Areley, and part of Enville and Bobbington. The hills are often rocky, with ſmall fragments upon and near the ſurface, in ſome parts quartzoſe, in others gritty. The ſurface ſoil varies in colour from red to grey, with all the ſhades of colour between. The cultivation the ſame as in other ſtrong ſoils. This pariſh has formerly been famous for fruit, eſpecially apples; but the orchards have been ſuffered to decline, though ſome recent attempts have been making towards reinſtating them, and the ſoil and aſpect are doubtleſs well adapted for the purpoſe.

At Sir EDWARD LITTLETON's, at Teddeſley Park, I obſerved a practice forgot to be named in its proper order, and in my opinion almoſt peculiar to the place. Although ſeveral hundred acres of land are kept in hand, yet almoſt the whole being kept in turf, little or no grain of any kind is grown; to ſupply therefore the deficiency of ſtraw for litter, large quantities of fern are collected, of which one or more large ſtacks are formed every year; conſiderable breadths of the common being mown for that purpoſe.

## PRICE OF PROVISIONS AND OTHER LANDED PRODUCE.

THE price of proviſions in this county has been in many inſtances very fluctuating, and their riſe and fall ſeem owing to a combination of different cauſes; to the plenty or ſcarcity; import or export: to the plenty or ſcarcity alſo of money. Since I have been in the farming buſineſs, which is about fifteen years, I have known wheat at all prices, from four ſhillings to ten ſhillings and ſixpence; barley from two ſhillings to ſeven ſhillings; and oats from one ſhilling and ſixpence to four ſhillings and ſixpence, and this for actual conſumption; but it muſt be obſerved that our buſhel is nine gallons and a half. Butchers meat has varied conſiderably in that period. Pork or bacon hogs, ſinking the offal, have ſold from two-pence halfpenny to four-pence halfpenny per pound; cows, calves, and ſheep, from three-pence to five-pence halfpenny. The price is at preſent high, but has by no means been gradually and regularly riſing, but very often fluctuating. The price of butchers meat has been generally more ſteady than that of corn. The following are nearly the preſent prices.

Wheat, eight ſhillings and ſix-pence the buſhel.

Barley, laſt malting ſeaſon, from five ſhillings and ſixpence to ſix ſhillings and ſixpence, but expected to be much cheaper the enſuing.

Oats, at preſent three ſhillings and ſixpence to four ſhillings. The buſhel for all grain here, except malt, contains nine gallons and a half.

Beef and mutton, three-pence halfpenny to four-pence halfpenny.

penny per pound, from Midſummer to Chriſtmas; and four-pence to five-pence from Chriſtmas to Midſummer.

Lamb, four-pence to eight-pence.

Veal, three-pence to five-pence per pound.

Dry bacon, ſix-pence to ſeven-pence whole ſides, and one penny more by retail.

Pork, in winter four-pence to five-pence: none ſold in ſummer.

Cheeſe, forty ſhillings to forty-five ſhillings per hundred, of one hundred and twenty pounds; and four-pence halfpenny to five-pence per pound by retail.

Butter, ten-pence to one ſhilling per pound, of eighteen ounces.

| | | *s.* | | *s.* | *d.* |
|---|---|---|---|---|---|
| Oak-timber, per foot | - - | 1 | to | 2 | 6 |
| Aſh | ditto - - | 9 | to | 1 | 6 |
| Elm | ditto - - | 9 | to | 1 | 6 |

The other ſorts, as beech, ſycamore, poplar, and the different ſorts of fir, according to quality and demand, plenty, ſcarcity, and other local circumſtances of time and place; varying from eight-pence or nine-pence to one ſhilling and ſix-pence, or two ſhillings per foot.

## WEIGHTS AND MEASURES.

THE cuſtomary weights and meaſures of this country differ conſiderably from the regular ſtandard; the cuſtom of Wolverhampton market being eighteen ounces to the pound of butter; one hundred and twenty pounds to the hundred of cheeſe; nine gallons and a half to the buſhel of barley, oats, beans, and peaſe; and ſeventy-two pounds to the buſhel of wheat: whilſt that of other markets in the county varies, ſome being more and ſome leſs. Malt is generally, through the county, ſold by the Wincheſter buſhel of eight gallons, and wheat-flour by the ſtone of fourteen pounds. Much complaint has been made of this variation, and much has been ſaid about a regulation of weights and meaſures, and obliging every perſon to ſell by the ſtatute or ſtandard weight or meaſure; but I cannot think it a matter of much importance, particularly in the wholeſale way: for in every contract of any magnitude, the parties will always underſtand each other. And although malt may be ſold out by a leſs meaſure than barley may have been bought in, yet the competition between different maltſters will render juſtice to the conſumer. In caſes of retail, let the magiſtrate do his duty, by protecting the poor from fraud: the wholeſale dealer needs not his protection, he will take care of himſelf: and the public are beſt ſerved by a competition between different dealers; who, the more numerous they are, the leſs danger will ariſe to the public of monopoly or combination.

## A LIST OF PLANTS, TREES, OR SHRUBS, NATIVES OF THIS COUNTY, REMARKABLE FOR BEAUTY OR USE, OR FOR THEIR MEDICINAL, POISONOUS, OR OTHER SINGULAR QUALITIES. THE DIETETIC, OR AGRICULTURAL PLANTS HAVING BEEN MOSTLY NOTICED BEFORE.

1. PRIVET (*liguſtrum vulgaris*); common in hedges on this farm; makes an excellent garden-fence, when cropped.

2. Brook lime (*veronica beccabunga*); a wholeſome, but pungent ſpring ſallad: common in ſtreams.

3. Valerian (*valeriana officinalis*); common in moiſt ground.

4. Flag (*iris pſeud-acorus*); in moiſt ſituations.

5. Reed (*arundo phragmites*); in rivers, ponds, and lakes, common.

6. Wild teaſel (*dipſacus ſylveſtris*); near Tamworth, common.

7. Dog-wood (*cornus ſanguinea*); in hedges common.

8. Scorpion-graſs (*myoſotis ſcorpioides*); hedges and fields, very common.

9. Viper-graſs (*echium vulgaris*); a ſhowy flower, very common.

10. Buckbean (*menyanthes nymphoides & trifoliata*); in pits common: a beautiful flower; the leaves of the latter extremely bitter, and two ounces ſaid to ſupply the place of a pound of hops.

11. Feather-foil (*hottonia paluſtris*); in watery places between Lichfield and Barton by the road-ſide; a beautiful flower.

12. Pimpernel (*anagallis arvenſis*); corn-fields, common.

13. Bell-flower (*campanula*); hedge-ſides.

14. Honey-ſuckle (*lonicera periclymenum*); hedges, common.

15. Mullein (*verbaſcums*), ſeveral ſorts; hedge-ſides.

16. Henbane (*hyoſcyamus niger*); amongſt rubbiſh and road-ſides.

17. Dwale, or deadly night-ſhade (*atropa belladonna*); amongſt the lime-works of Sedgeley and Dudley, very common: one of our moſt poiſonous plants.

18. Woody night-ſhade (*ſolanum dulcamara*); in pits and hedges.

19. Centory (*chironia centaurium*); extremely bitter; in paſtures.

20. Buckthorn (*rhamnus catharticus)*; in hedges.

21. Smooth buckthorn (*rhamnus frangula*); in hedges on this farm.

22. Gooſeberry (*ribes groſſularia*). Mr. Sneyd of Belmont, near Leek, has diſcovered this ſhrub in the Moorlands of the *dioica* kind; that is, unfertile, unleſs male and female plants grow near each other; of which he ſhowed me ſpecimens tranſplanted into his garden.

23. Periwinkle (*vinca minor*); in hedges; alſo the (*vinca major*).

24. Engliſh mercury (*chenopodium bonus Henricus*); on roadſides: a good dietetic plant, worthy of cultivation, little inferior to ſpinach.

25. White, green, and maple-leaved gooſefoot (*chenopodiums alba*, *viride*, & *hybridum*); common garden weeds.

26. Sanicle (*ſanicula Europæa*); hedge-ſides, near Betley, and elſewhere: ſlightly bitter, aromatic, and aſtringent.

27. Pignut (*bunium flexuoſum*); paſtures, orchards, &c. The roots would be an agreeable addition to our winter deſſerts. (Withering).

28. Hemlock (*conium maculatum*); in hedges common: a plant of active poiſonous qualities.

29. Angelica (*angelica ſylveſtris)*; in moiſt woods and hedges, common; warm, acrid, bitter, and aromatic. (Withering).

30. Water parſnip (*ſcium anguſtifolium*); common in ſtreams: a plant of active properties, that ought to be inquired into. (Withering).

31. Fools parſley, or leſſer hemlock (*aethuſa cynapium*); common in gardens, and much reſembling parſley, for which

it is ſometimes miſtaken: "when eaten it occaſions ſickneſs." (WITHERING).

3 . Wild chervil (*chærophyllum temulum*); common in hedges.

33 Ground aſh (*aegopodium podagraria*); in ſome hedges and orchards in great abundance: the leaves may be eaten early in the ſpring as a pot-herb.

34. Marſh-elder (*viburnum opulus)*; a handſome ſhrub; common in hedges. The guelder-roſe is a variety of it.

35. White-berried elder (*ſambucus fructo-alba*); at Combridge, near Roceſter; alſo near the farm-houſe occupied by Mr. HORDERN, Eſſington, near Wolverhampton.

36. Purging flax (*linum catharticum*); in paſtures on this farm: an infuſion of two drams or more of the dried plant is an excellent purge. (WITHERING).

37. Snow-drop (*galanthus nivalis*); in orchards; a beautiful early flower, of welcome appearance, as foretelling the approach of ſpring.——Fair maids of February. (WITHERING).

38. Engliſh hyacinth or harebell (*hyachinthus non ſcriptus*); hedges very common: the freſh roots are poiſonous, and may be converted into ſtarch. (WITHERING).

39. Myrtle flag (*acorus calamus*); banks of rivers, near the river at Tamworth, at the bottom of Mr. OLDERSHAW'S garden: the root powdered might ſupply the place of our foreign ſpices; it is our only native true aromatic plant. (LINNÆUS).

40 Barberry (*berberris vulgaris*); in hedges. This ſhrub is ſaid to have the quality of blighting the ears of wheat, even to the diſtance of three or four hundred yards acroſs a field. The leaves and berries are gratefully acid.

41. Water plantain (*aliſma plantago*); growing in water; common.

42. Willow herbs (*epilobium hirſutum & anguſtifolium*); a beautiful ſhowy flower, growing in hedges and moiſt ditches on this farm and elſewhere.

43. Knot-graſs (*polygonum aviculare*); road-ſides, paths, and corn-fields, common. This plant and ſeveral others of the ſame ſpecies are very productive in ſeeds, which ſeem peculiarly the food of ſmall birds, and intended by a bountiful Providence as a principal article in the ſupport of that beautiful part of the animated creation.

44. Herb Paris (*paris quadrifolia*); hedge-ſide, in a meadow on this farm in plenty. The roots will vomit as well as ipecacuanha, but muſt be given in a double quantity. (LINNÆUS in WITHERING).

45. Moſchatel (*adoxa moſchatellina*); ditch banks on this farm, very early in the ſpring.

46. Stitch wort (*ſtellaria holoſtæa*); hedge-ſides, early in the ſpring.

47. Stone crops (*ſedums telephium & acre*); even the former growing on roofs in the Moorlands, particularly at Wetton; the latter on mountains in the Moorlands, and roofs elſewhere.

48. Wood ſorrel (*oxalis acetoſella*); woods and hedge-banks: the juice is gratefully acid, and a conſerve is made from it.

49. Lychnis's of ſorts, particularly the (*lychnis flos cuculi*) or cuckow flower, a ragged red flower in meadows; and the red and white wild campion in hedges (*lychnis dioica*).

50. Spurry (*ſpergula arvenſis & nodoſa*); common on this farm on ſome poor arable land when in tillage; very prolific in ſeeds, which are eaten by ſmall birds.

51. Agrimony (*agrimonia eupatoria*); hedge-ſides common.

52. Dyer's weed *(reſeda luteola)* ; in the lime-works at Dudley, and at Hayhead in plenty. This plant is uſed in dyeing.

53. Spurges *(euphorbias exigua & helioſcopa)*, devil's milk ; in gardens and corn-fields common.

54. Houſe-leek *(ſempervivum tectorum)* ; on roofs and old walls.

55. Prunus's, the bird-cherry *(prunus padus)*, is a beautiful flowering ſhrub, growing in a hedge on this farm; alſo on Buſhbury-Hall farm, about Shelford near Walſall, and in the Moorlands: the ſloe and bullace *(prunus ſpinoſa & inſititia)* are very common in hedges.

56. Hawthorn. The common white hawthorn is well known every-where ; but the wild ſervice *(cratægus torminalis)* is a rare ſhrub, worthy a place in pleaſure-grounds: it grows ſpontaneouſly in a hedge upon this farm.

57. Crab-tree *(pyrus malus)* ; in hedges. The acid juice, called verjuice, is a good aſtringent or repellent, and uſed in ſtrains. With a proper addition of ſugar a grateful liquor may be made of it, little inferior to old hock. (Withering).

58. Roſe, ſweet briar *(roſa rubiginoſa)*, and dog-roſe *(roſa canina)* ; in hedges : the leaves are a good ſubſtitute for tea.

59. Bramble, including the raſpberry *(rubus idæus)*, and the blackberry *(rubus fruticoſus)* ; in hedges and woods.

60. Strawberry *(fragaria)* ; in hedge-banks and woods. Mr. Sneyd of Belmont, has a ſpecies of ſtrawberry, which he is certain is a *dioica* plant ; that is, unfertile without both male and female plants ; but, I believe, not a native.

61. Herb bennet *(geum urbanum)* ; woods and hedges.

62. Celandine *(chelidonium majus)* ; in hedges. The juice is very acrimonious, and will cure warts and the itch. (Withering).

63. Water lilly *(nymphæa lutea & alba)* ; in rivers.

64. Bugle (*ajuga reptans*); in paſtures: the roots are aſtringent.

65. Wood ſage (*teucrium ſcorodonia*); ditch-banks and thickets.

66. Betony (*betonica officinalis*); woods and ſhady places.

67. Woundwort (*ſtachys ſylvatica*); in hedges.

68. Wild thyme (*thymus ſerpyllum*); heaths and road-ſides, in the ſouth part of the county.

69. Snapdragons (*antirrhinums majus & linaria*); the former a beautiful flower, abounding on the walls of Ruſhall Caſtle, near Walſall; the latter common in hedges, called toad-flax. Withering ſays of the latter, an infuſion of the leaves is diuretic and purgative: the expreſſed juice mixed with milk is a poiſon to flies.

70. Figworts (*ſcrophularia aquatica & nodoſa*); moiſt places. Withering ſays, ſwine that have the ſcab are cured by waſhing with a decoction of the leaves.

71. Fox-glove (*digitalis purpurea*); a ſhowy plant; very common.

72. Whitlow-graſs (*draba verna*); walls and dry paſtures: a diminutive plant, very early in the ſpring in flower.

73. Water-creſs (*ſiſymbrium naſturtium*); ſprings and rivulets: an early and wholeſome ſpring ſallad; antiſcorbutic and ſtomachic.

74. Hedge-muſtards (*eriſymums officinale & alliaria*).

75. Gilliflower (*cheiranthus chiri*); on old walls.

76. Geraniums, various ſorts in paſtures.

77. Mallow (*malva ſylveſtris*); road-ſides and hedges.

78. Tree mallow (*lavatera arborea*); road-ſides.

79. Dyer's broom (*geniſta tinctoria*); in ſome paſtures.

80. Creeping reſtharrow (*ononis repens*); road-ſide near Himley: the other reſtharrow was named before.

81. Melilot (*trifolium melilotis officinalis*). This plant is not

very common in this county, but I have ſeen ſpecimens of it, particularly in Stafford Field, and between there and Eccleſhall. I have ſometimes wondered that it has been taken ſo little notice of as an agricultural plant, being the moſt luxuriant of all our trefoils, and the moſt tenacious of growth. Horſes are extremely fond of it (this I have often remarked). Cows, ſheep, and ſwine eat it. LINNÆUS calls it an annual plant, HUDSON a biennial, and BERKENHOUT a perennial. In ſome parts of the counties of Rutland and Bedford, particularly the former, it is ſo abundant amongſt wheat, and other grain, that I have been aſſured on the ſpot, the drawing it out as a weed, has frequently coſt five or ſix ſhillings per acre. Hence I ſhould ſuppoſe it a perennial. This circumſtance may perhaps be a ſufficient warning againſt introducing it upon arable land: yet a plant ſo tenacious of growth, and acceptable to cattle, may poſſibly be a good addition to our meadow and paſture herbage.

82. St. John's wort (*hypericums*) ; a beautiful flower ; hedges.

83. Hemp-weed (*eupatorium cannabinum*) ; in moiſt ditches.

84. Tanſey (*tanacetum vulgaris*) ; road-ſides and banks of rivers.

85. Wormwood (*artemiſia*) ; road-ſides and rocky places.

86. Feverfew (*matricaria parthemium*) ; hedges and walls.

87. Chamomile (*anthemis nobilis*) ; on old trodden turf.

88. Violet (*viola odorata*) ; ditch-banks.

89. Panſy (*viola tricolor*) ; in corn-fields.

90. Cows and calves (*arum maculatum*) ; ditch-banks.

91. Cat's-tail (*typha latifolia*) ; ponds and rivers.

92. Burweed (*ſparganium erectum*) ; ditches and moiſt ground.

93. Hop (*humulus lupulus*); hedges at Whittington and elſewhere.

94. Black bryony (*tamus communis*); hedges and thickets.

95. Common bryony, wild vine (*bryonia dioica*); hedges near Lichfield.

96. Croſs wort (*valantia cruciata*); baulks by hedge-ſides.

97. Pellitory of the wall (*parietaria officinalis*); on old walls, on the gateway leading to Lichfield minſter.

98. Burdock (*arctium lappa*); road-ſides and rubbiſh.

99. Clubb-moſs (*lycopodium clavatum*); on Cannock Heath.

100. Stinking morel, or polecat (*phallus impudicus*); in thickets.

The above are our moſt remarkable native plants, ſo far as comes under my obſervation; beſides thoſe mentioned before as agricultural plants or weeds: many of the more common and well-known ones are omitted, and perhaps ſome worthy of notice may have been overlooked.

## STAFFORDSHIRE COMMERCIAL ACCOUNT: OR, A SKETCH OF THE COMMERCIAL STATE OF THE COUNTY OF STAFFORD, UNDER THE FOLLOWING HEADS: 1. MANUFACTURES. 2. MINES. 3. CONVENIENCES FOR CONVEYANCE UPON CANALS AND ROADS.

1. MANUFACTURES. The manufactures of Staffordſhire are very conſiderable, and comprehend a variety of

articles, particularly hardware, nails, toys, japanned goods, and potter's ware; alſo productions in cotton, ſilk, leather, woollen, linen, and many other articles.

The manufacture of hardware is carried on in the ſouth part of the county to a great extent; and Wolverhampton, and its neighbouring populous villages, produce locks of every kind, and of the very beſt quality: and this may be termed the ſtaple manufacture of this town. Buckles are alſo manufactured here, and a great number of hands employed upon that article. In ſome particulars of ſteel-toys, eſpecially watch-chains, they have long been famous for exceeding every other place, and ſtill ſtand unrivalled: but this manufacture in particular, and the others in general, have ſuffered much by the war, orders having been wanting and remittances precarious. The manufacture of edge-tools, files, augers, and japanned goods here is conſiderably extenſive, as well as that of a great many other articles.

The ſtaple manufacture of Walſall may be ſaid to be ſhoe-buckles and chapes, in which a great number of hands are employed, and ſome good fortunes have been made. Alſo this town and neighbourhood, particularly Bloxwich, is famous for the manufacture of ſaddlers ironmongery, ſuch as bridle-bits, ſtirrups, ſpurs, &c. Theſe are ſold to the ſaddlers ironmongers at Walſall, and form the baſis of a conſiderable traffic, carried on to great advantage, and by them circulated to every part of the kingdom, as I have been informed by Mr. CURTIS of Walſall.

The manufacture of nails in Staffordſhire is very extenſive, employing many thouſands of hands in ſome of the moſt populous country pariſhes, particularly Sedgeley, Rowley, Weſtbromwick, Smethwich, Wombourne, Pelſall, the Foreign of Walſall, and many other places. A great number of women and children, as well as men, are employed in making the finer and lighter ſorts, which they do equally well. The manufactures of Mr. BOLTON at Handſworth are in this county, and very conſiderable, employing many hundreds of hands, chiefly, I believe, in various kinds of toys, and in the machinery for ſteam engines. Bilſtone furniſhes a variety of plated, lackered, japanned, and even enamelled goods. Wedneſbury, I believe, does ſomething in the gun trade. Tobacco and ſnuff-boxes of iron or ſteel, and finiſhed in various ways, are got up at Darlaſton, Willenhall, and in their neighbourhood. Moſt of theſe manufactures have ſuffered more or leſs by the war; though I underſtand, the trades of nails and ſadlers ironmongery are pretty good; buckles and locks indifferent; and the ſteel-toy trade almoſt annihilated. Theſe manufactures ſuffered a ſimilar, or perhaps greater depreſſion in the American war; but were extremely and uniformly flouriſhing during the peace, from the concluſion of the American war to the commencement of the preſent. This is a ſufficient proof that their flouriſhing ſtate is conſiſtent only with a ſtate of peace.

The manufacture of potter's ware in the north of the county is very extenſive and important, the value of the manufactured article being, as it were, a creation of the manufacturer, from a raw material of no value.

The Potteries conſiſt of a number of ſcattered villages, occupying an extent of about ten miles; and may contain about twenty thouſand inhabitants, including thoſe who depend upon them for employment and ſubſiſtence. They have not been ſo flouriſhing ſince the war.

Stafford, the county town, has a very conſiderable manufacture of ſhoes, both for home conſumption and exportation; and the tanning and other different branches of the leather trade, and alſo the manufacture of hats, are carried on upon a large ſcale in many other towns in the county.

The cotton manufactures of this county are not inconſiderable: thoſe of Mr. ARKWRIGHT at Roceſter, and elſewhere near the Dove, are upon a large ſcale, and employ a great number of hands; and thoſe of Meſſrs. PEELE and WILKES, at Fazely and Tamworth, are very conſiderable; beſides which there are extenſive cotton works at Burton and Tutbury. This manufacture has a great tendency to promote our national induſtry, by finding employment ſuitable to both ſexes in early youth, and thus initiating them in early habits of induſtry. The country is much obliged to thoſe gentlemen by whoſe exertions and perſeverance this manufacture has been introduced and eſtabliſhed.

Leek has a conſiderable manufacture in the ſilk and mohair way; the manufactured goods from which are, ſewing-ſilks, twiſt, buttons, ribbons, ſilk-ferrets, ſhawls and ſilk-handkerchiefs. In theſe manufactures, as by information from Meſſrs. SLEIGH and ALSOP, and PHILIPS and FORD, manufacturers, and others, are employed about two thouſand inhabitants of the town, and one thouſand of the adjacent country. In this trade ſome good fortunes have been made, and it has been very flouriſhing; but the check on paper credit, which in a great meaſure hurt the confidence of all connections, diminiſhed the trade here: and the war muſt in ſome degree have damped the demand for it abroad: yet the trade is now in a flouriſhing ſtate, and conſiderably better than it was ſome months ago.

Cheadle and *Teyn* have a conſiderable manufacture of tape, which finds employment for the induſtry of its inhabitants.

The woollen manufactory within this county is not very conſiderable, and a large proportion of the raw wool grown therein is ſold into the cloathing and ſtocking countries; yet there are wool-combers in moſt of the towns, and ſome which puſh a conſiderable buſineſs; and a good deal of woollen cloth is got up in the country by private families, though in leſs quantity than formerly.

There is no conſiderable public manufacture of linen, but a good deal of hurden, hempen, and flaxen cloth got up in private families; a great many people reſident in the country being now, and having long been, in the habit of growing a patch of hemp and flax, which is generally manufactured within the county.

Of the population of Staffordſhire, I ſuppoſe one third are ſupported by agricultural or other profeſſions or employments thereon depending, and two thirds by manufactures, commerce, and mines.

With reſpect to the effects of extenſive manufactures on agriculture, I believe there can exiſt but one rational opinion, and which muſt be, that thoſe effects are of the moſt advantageous kind, and that in every inſtance the value of landed property will moſt rapidly riſe, as the demand for and facility of diſpoſing of its products is increaſed; and with this opinion agrees every remark I have received upon the 28th Query propoſed by the BOARD, and which refers to this particular ſubject. The only inconveniences that can poſſibly be complained of are, firſt, an advance in the price of labour, which is always higheſt in manufacturing countries; and, ſecondly, an increaſe in poor's rates, which muſt always be higheſt in populous countries. Theſe inconveniences are abundantly compenſated for by an increaſing conſumption of landed produce, and a briſk demand for ſuch produce at market.

MINES. The mines of this county are valuable and extenſive, and in ſome articles may fairly be pronounced inexhauſtible. The coal land of Staffordſhire, which has been proved ſuch, and where the exiſtence of that mineral near enough the ſurface to be eaſily raiſed, has been aſcertained,

tained, contains a ſpace of about 50,000 acres: of this ſpace the quantity exhauſted by conſumption, from the earlieſt times to the preſent day, does not exceed a tenth of the whole; and though the ſcarcity and advance in price of this article have been complained of, the ſcarcity of it has been owing to local cauſes; and the advance in price has perhaps been no more than a juſt proportion to the advance in the price of labour, and the machinery neceſſary in the trade. In the ſouth of the county the coal country extends in length from Cannock Heath (including a part of that waſte) to near Stourbridge, and in breadth from Wolverhampton to Walſall. In the north of the county, the neighbourhood of Newcaſtle and the Potteries, Lane-End, Holly-Buſh, and again in the neighbourhood of Cheadle. The country producing lime-ſtone is ſtill more extenſive; at Sedgley and Dudley Caſtle Hills, Ruſhall and Hayhead, but above all on the north-eaſt moorlands and banks of the upper parts of the Dove, where the greateſt conſumption or length of time could ſcarce apparently leſſen the immenſe quantity. In this latter diſtrict are ſome veins of alabaſter, which is alſo dug between Needwood Foreſt and Tutbury. Of freeſtone here are very good and extenſive quarries. Bilſtone affords a freeſtone of very fine grit, fit either for mouldings, building, or grindſtones of the finer ſort, for which laſt purpoſe it is excellently adapted. Gornal, near Sedgeley, has alſo plentiful quarries of a coarſer and cheaper freeſtone, uſed for the ſame purpoſes as that of Bilſtone. Tixall produces an excellent and durable building freeſtone, which is eaſily raiſed in blocks of almoſt any dimenſion; and the ſame article is again found at Wrotteſley, Breewood-Park, Pendeford, and a great many other places in the county.

IRON. The ſtrata of iron ore in the neighbourhood of Wedneſbury, Tipton, Bilſtone, part of the pariſh of Sedgeley, and other parts of the coal country, are very extenſive. Theſe ſtrata generally lay under a ſtratum of coal, and have occaſioned ſome very conſiderable iron-works to be lately eſtabliſhed on the banks of the Birmingham Canal, where the iron trade is very much increaſing; and it is to be hoped the capital ſpirit of enterprize and exertion of our iron-maſters will, in time, produce this neceſſary article in ſufficient quantity to preclude the neceſſity of an importation from abroad; or at leaſt to leſſen the quantity of ſuch importation, the balance of trade in which, is very much againſt this country.

In theſe mines of coal, lime, and iron, and in the founderies, blaſt-furnaces, ſlitting-mills, and other branches of the iron trade, great numbers of workmen are employed, and the extenſion of the iron-trade in particular is of great conſequence to the intereſts of this kingdom. The extent of the iron trade in all its varieties, wrought and unwrought, for agricultural and other internal purpoſes, and for home conſumption and exportation, under its innumerable ſhapes and forms, is now ſo very great, as to rival even that of the great ſtaple, wool; and to make the ſuperiority of the latter ſomewhat queſtionable; and from the abundance of iron ore and fuel with which this country abounds, the trade, particularly ſo far as relates to the production of the metal, is capable of being much extended; and there can be little doubt of the poſſibility that this country will wholly ſupply itſelf with that article.

The other minerals of the county are principally thoſe of copper and lead, of both which conſiderable quantities are raiſed at Ecton, near Warlow, upon the eſtate of his Grace the DUKE OF DEVONSHIRE. Alſo a copper mine is worked at Mixon, within a few miles of Leek, and a lead mine near Stanton-Moor. And there are ſeveral braſs works in this part of the county, particularly at Whiſton, Oak-Moor, and in the neighbourhood of Cheadle; and at Shirleywich, near Ingeſtree, is a conſiderable ſalt-work.

Canals. Reſpecting the conveniences for conveyance of heavy articles, perhaps no county in England, or even country in the univerſe of equal extent, is better accommodated with artificial canals. I have marked the length upon the map of the county herewith ſent, of thoſe now in hand, as well as thoſe which have been wholly executed nearly within the laſt 30 years. Theſe lands extend about 200 miles. Two or three good projects of the ſame kind alſo might ſtill be marked out within the county. They much facilitate the conveyance of bulky and weighty articles, ſuch as coal, lime-ſtone, and lime, iron in the ore or metal, and conſiderably reduce the expence of carriage. The trade in thoſe articles has conſequently been extended in a very conſiderable degree, and the population of the neighbourhood where thoſe articles are produced has increaſed. The Writer of this is of opinion, that the very rapid extenſion, not only of Birmingham for the laſt twenty years previous to the preſent war, but alſo of the Potteries, was much promoted by canal conveyance. Similar inſtances are to be found elſewhere: at Tipton-Green, now a populous town, on the banks of the Birmingham Canal, at Mr. Wilkinson's extenſive works at Bradley near Bilſton, as well as at the works before named in a general way, and at many others. Thus theſe canals have been a means of conſiderably increaſing population, by enabling the proprietors of mines of iron, coal, and lime, to extend their works, and by that means employ more people both in raiſing, manufacturing, and tranſporting the different articles. Theſe canals coſt in execution 500,000l. and upon the average pay 10 per cent. per annum to the proprietors; they conſequently add half a million to the national capital, and 50,000l. per annum to its income, and are certainly a great national improvement and accommodation to a trading country.

ROADS. The roads of this county have been very much improved within the laſt forty years, by the introduction of toll-gates upon moſt of the public thoroughfares, and which, though a cauſe of much clamour at their firſt introduction, have been the means of much improving ſuch roads; and no one now thinks any-thing of the expence of paying toll when he conſiders the advantage he enjoys in point of eaſe, ſafety, and expedition, in travelling or conveying goods or other articles. Many of the private roads are ſtill in an indifferent ſtate; and though they might be much improved by attention in the reſpective ſurveyors, and obliging the liberties to perform their ſtatute duty, there ſeems in general a want of ſufficient energy to effect this; and perhaps in roads much uſed, and where materials for their repair are at a diſtance, their complete repair might lay too heavy on their reſpective liberties, and their reparation by a tax collected at a toll-gate upon all travellers may be the moſt equitable way. Next to the improvement by a canal, a country is moſt improved by good roads; and in compariſon to the different accommodation between a good and bad one, the expence of an equitable gate-toll is a very trifling object.

I ſhall conclude this report with juſt remarking the annual poor's rate expenditure of this county, from the Parliamentary inquiries made in conſequence of Mr. GILBERT's attempts at reforming our code of poor laws. They were then as follows:

*Staffordſhire poor's rate, &c. annual expences from Parliamentary inquiries*, 1783, 1784, and 1785.

| | £. | s. | d. |
|---|---|---|---|
| Whole county annual expence upon a medium of thoſe three years - | 45,404 | 10 | 10 |
| Of this, net money paid for the poor - | 40,963 | 13 | 7 |
| County rates, including gaols, houſes of correction, county bridges, militia, vagrants, &c. - - - | 3261 | 5 | 4 |
| Churchwardens accounts for reparation of churches, &c. - - - | 1,179 | 11 | 11 |
| Total | 45,404 | 10 | 10 |

A curious circumſtance I remarked in ſome of the pariſhes of this county where the population is pretty well aſcertained; which is, that five times the annual poor's rate expenditure in pounds, equals the population; or, that the annual poor's rate expenditure is four ſhillings per head upon the whole maſs of inhabitants. In other places, however, the population was conſiderably more, than the number thus produced.

The Writer of this Report had intended to have gone in ſome meaſure into the political arithmetic of the county, ſuch as rentals, net value of land, amount of capitals employed in trade and agriculture reſpectively, and had collected ſome data on which to found ſuch calculations; but, upon reconſideration, conceiving it might not be very agreeable to ſome perſons intereſted, for ſuch particulars to be expoſed to public view, he has declined it, and believes it improper, unleſs ſimilar particulars were impartially brought forward of all the other counties.

Aug. 22, 1794.

*W. PITT.*